Vol. XVI. APRIL, 1895. No. 4.

PUBLISHED MONTHLY AT $3 A YEAR. SINGLE COPIES, 30 CENTS.

THE JOURNAL OF COMPARATIVE MEDICINE AND VETERINARY ARCHIVES

EDITED AND PUBLISHED BY

RUSH SHIPPEN HUIDEKOPER, Veterinarian (Alfort),

W. A. CONKLIN, PH.D., D.V.S., A. W. CLEMENT, D.V.S.,

W. HORACE HOSKINS, D.V.S.

FOUR PAGES OF READING MATTER EXTRA THIS MONTH.

CONTENTS.

ORIGINAL ARTICLES:

Address at the Commencement of the New York College of Veterinary Surgeons. By PROFESSOR JAMES LAW 201

The Anatomy of the Large American Fluke (*Fasciola Magna*) and a Comparison with Other Species of the Genus Fasciola, S.ST. By CHAS. WARDELL STILES, PH.D. 213

Enchondroma in the Bitch. By C. A. BOUTELLE 222

Antitoxin. I. The Production of Diphtheria Toxin. By WILLIAM HALLOCK PARK, M.D. 228

II. The Production of Diphtheria Antitoxin. By H. D. GILL, V.S. 229

III. Therapeutic Use of Antitoxin. By J. H. HUDDLESTON, M.D. 233

COMMENCEMENT EXERCISES:

Ontario Veterinary College 236

Kansas City Veterinary College 240

American Veterinary College 241

New York College of Veterinary Surgeons 242

PERSONAL 244

EDITORIALS 246

OBITUARY—John Gamgee 247

REVIEWS—Friedberger and Fröhner's *Pathology and Therapeutics of the Domestic Animals—Antisepsis and Antiseptics* 247, 248

CORRESPONDENCE 248

REPORTS OF CASES 249

SELECTION:

Guernsey Breeders' Association. 250

SOCIETY PROCEEDINGS:

California State Veterinary Medical Association 253

Keystone Veterinary Medical Association 257

Wisconsin Society of Veterinary Graduates 258

Missouri Valley Veterinary Association 259

Annual Meeting of the American Veterinary College Alumni Association . . . 260

LEGISLATION—ITEMS OF INTEREST—POINTS WORTH KNOWING . . . 261–268

ALL COMMUNICATIONS AND PAYMENTS SHOULD BE ADDRESSED TO

Dr. W. Horace Hoskins, 3452 Ludlow Street, Philadelphia, Pa.

Copies may be had in London of Baillière, Tindall & Cox.

Complete Work Now Ready.

PATHOLOGY AND THERAPEUTICS OF DOMESTIC ANIMALS

BY

DR. FRIEDBERGER,

Professor of Veterinary Medicine in the Royal Veterinary School at Munich,

AND

DR. FRÖHNER,

Professor of Veterinary Medicine in the Royal Veterinary School at Berlin.

TRANSLATED FROM THE MOST RECENT EDITION WITH ANNOTATIONS,

BY

PROF. W. L. ZUILL, M.D., D.V.S.,

Late Professor of Surgery and Obstetrics in the Veterinary Department of the University of Pennsylvania; Member of the Academy of Natural Sciences of Philadelphia; Member of the United States Veterinary Medical Association; Member of the Philadelphia County Medical Society.

TOGETHER WITH

THE NOTES OF THE FRENCH TRANSLATORS,

AND

SELECTIONS FROM THOSE OF PROF. TRASBOT.

In Two Volumes of about 600 pages each; Price, in Cloth, $6.00 per Vol., Net

DESCRIPTIVE CIRCULAR ON APPLICATION.

FOR SALE BY ALL BOOKSELLERS.

Orders received by the Publisher, W. L. Zuill, M.D., D.V.S., 857 North Broad St., Philadelphia, or by the Printer, W. J. Dornan, 100 North Seventh St., Philadelphia.

THE CHEMICAL TREATMENT FOR CONSUMPTION,

Asthma, Chronic Bronchitis, Tubercular Laryngitis and Catarrh

INSTITUTED BY W. R. AMICK, A.M., M.D., of CINCINNATI,

is supplied, to Physicians Only, by the exclusive Compounders,

THE AMICK CHEMICAL CO., 166 W. SEVENTH STREET,

Cincinnati, Ohio, U. S. A. It has been Tested, Endorsed and

ADOPTED BY THE MEDICAL PROFESSION OF ALL SCHOOLS

as the only Successful Treatment for Pulmonary Diseases.

TEST PACKAGES OF THE AMICK MEDICINES SENT FREE

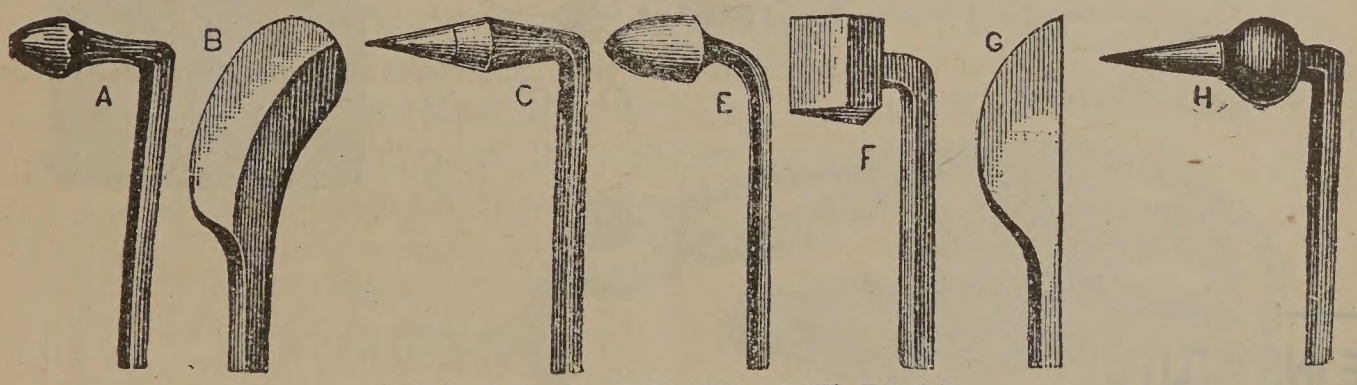
of cost to Physicians Everywhere for each new Patient.

DR. AMICK'S THEORY ON WHICH THE TREATMENT IS BASED

Cost of the Medicines and other Necessary Information on Request.

THE AMICK CHEMICAL CO.,
Manufacturing Chemists,
Cincinnati, O., U. S. A.

FIRING IRONS.



PRICE, 75 CENTS NET EACH.

JOHN REYNDERS & CO.

303 Fourth Avenue, NEW YORK.

VETERINARY INSTRUMENTS OF EVERY DESCRIPTION.

New Catalogue (5th edition), 80 pages and 500 illustrations, mailed free on application.

Bound Copies, 15 cents.

THE BERNS VETERINARY FOMENTATION PADS, adapted to any part of the body, taking place of Linseed Meal and other poultices, hot or cold.

SLINGS, for any size horse, $20.00. **Ropes and Pulleys** for same, $6.75 extra.

New circular, demonstrating above fully, on application.

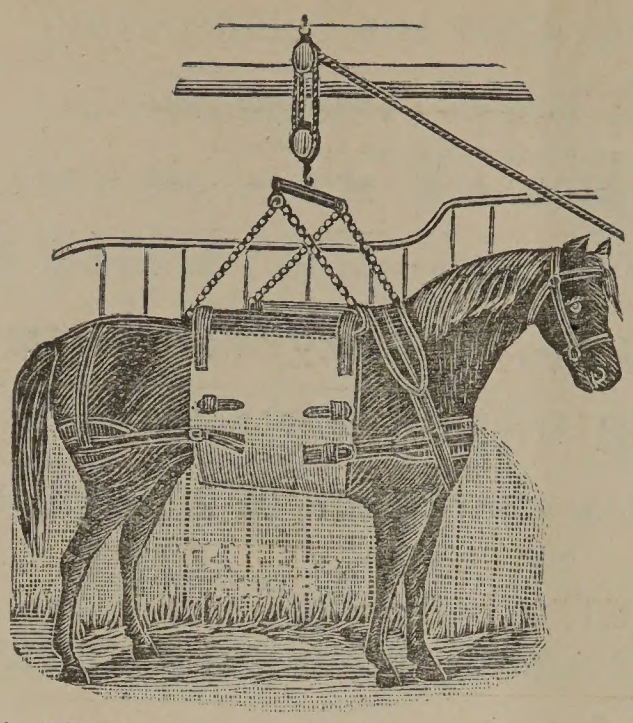
Specialties:

Dental and Castrating Outfits, Fever Thermometers and Hypodermic Syringes; **Green's Extension Bit,** or Mouth Speculum, new improved, $6.00 net.

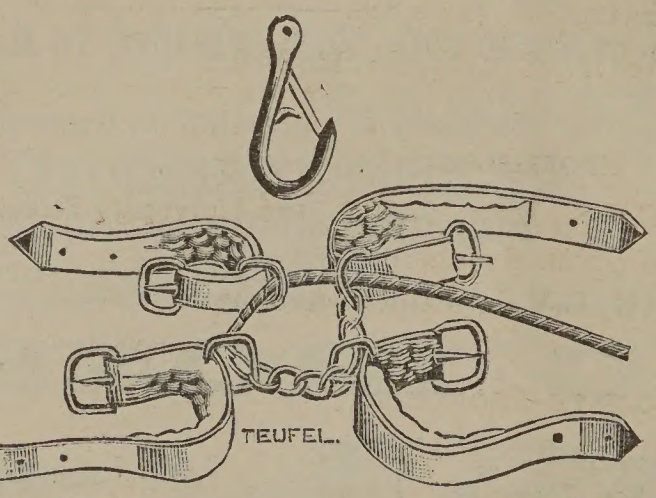
Hand Forged Rasps, Guarded Handles, solid, $2.25; Unscrewing, $3.50; Plain Handles, solid, $1.50; Unscrewing, $2.75.

Superior Floats, Handles solid, $2.00; Unscrewing, $2.75; Front Tooth Files, plain, 75c.; in Handle, $1.75.

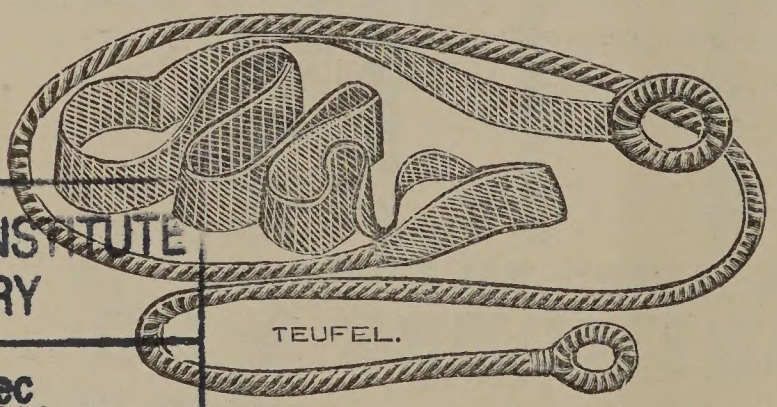
Instrument Makers to the Hospital Department of the American Veterinary College



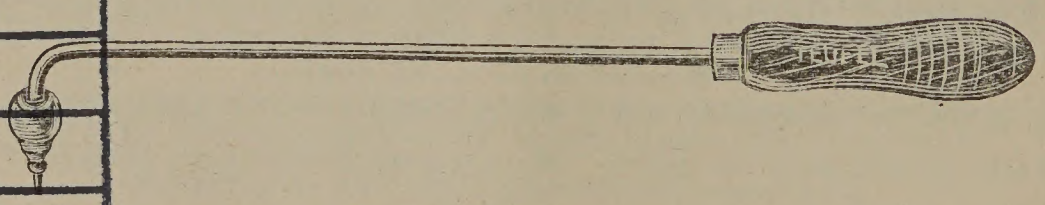
Zuill's Sling, ... $22 00



English Hobbes, . . . $12 00



Side Lines, ... $4 50

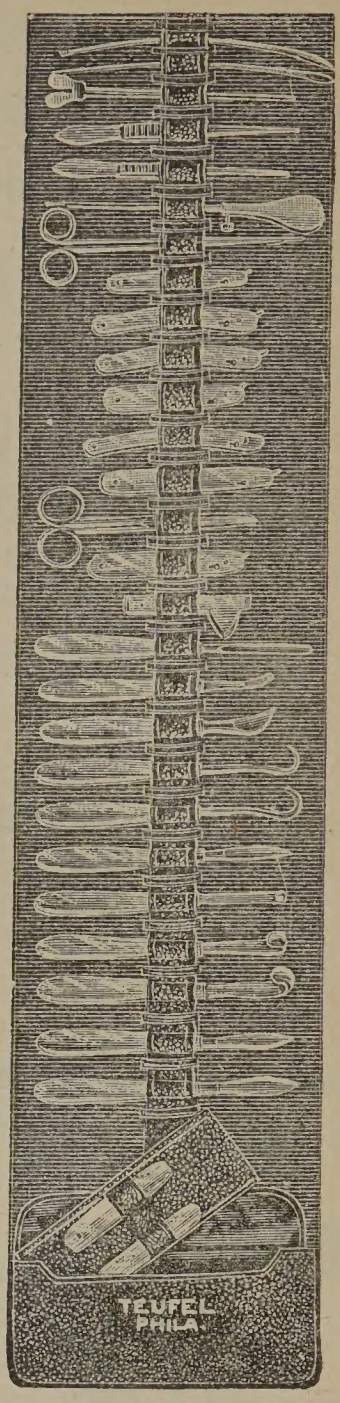


Firing Irons, with platina point, . . . $3 00

WELLCOME INSTITUTE LIBRARY
WelMOmec

Write for Catalogue and Mention this Journal.

W. L. Zuill's Aseptic Operating Case, ... $35 00



JACOB J. TEUFEL & BRO. { MANUFACTURERS OF VETERINARY INSTRUMENTS,

114 South Tenth Street, Philadelphia, Pa., U. S. A.

McGILL UNIVERSITY.

FACULTY OF COMPARATIVE MEDICINE AND VETERINARY SCIENCE.

LATE

MONTREAL VETERINARY COLLEGE.

THE PRINCIPAL (*ex-officio*):
SIR W. DAWSON, C.M.G., LL.D., F.R.S.

PROFESSORS:

D. McEACHRAN, F.R.C.V.S., Edin., D.V.S., 176 University Street.
M. C. BAKER, D.V.S., 6 Union Avenue.
CHARLES McEACHRAN, D.V.S., 6 Union Avenue

ASSOCIATE PROFESSORS:

C. F. GIRDWOOD, M.D., 54 Beaver Hall.
GEO. WILKINS, M.D., 896 Dorchester Street.
A. D. BLACKADER, B.A., M.D., 236 Mountain Street.
D. P. PENHALLOW, B.Sc., Sherbrooke Street.
WESLEY MILLS, M.A., M.D., D.V.S. McGill College.

DEAN:
D. McEACHRAN.

REGISTRAR:
CHAS. McEACHRAN.

SESSION 1894-95.

The Fourth Session of the Faculty (being the twenty-seventh of the Montreal Veterinary College) will be opened on Wednesday, the 3d of October, 1894, by an introductory lecture, at 8 P.M., in the lecture room of the Faculty, No. 6 Union Avenue. The regular course of lectures will begin on Thursday, 4th of October, at the hours named in the time-table, and will continue till the end of March.

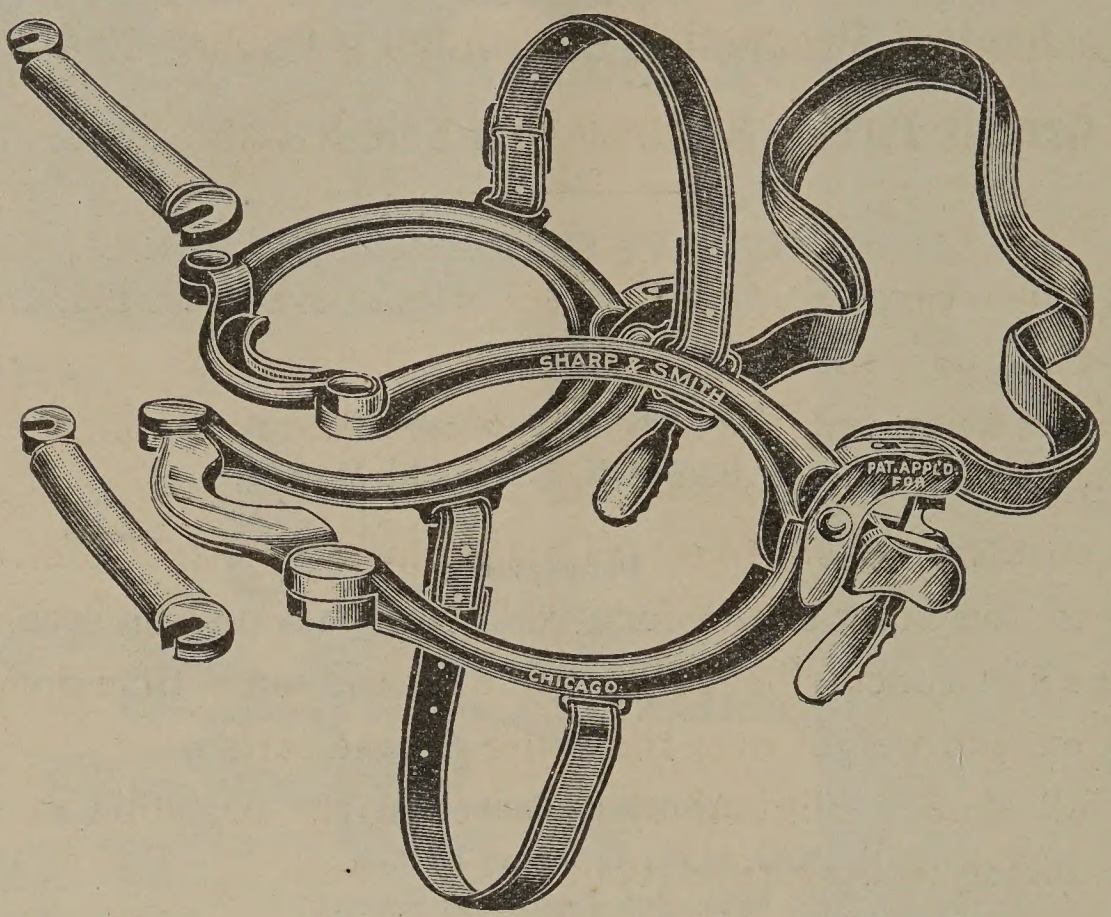
For Annual Calendar and full information, apply to

C. McEACHRAN, *Registrar.*

SHARP & SMITH,

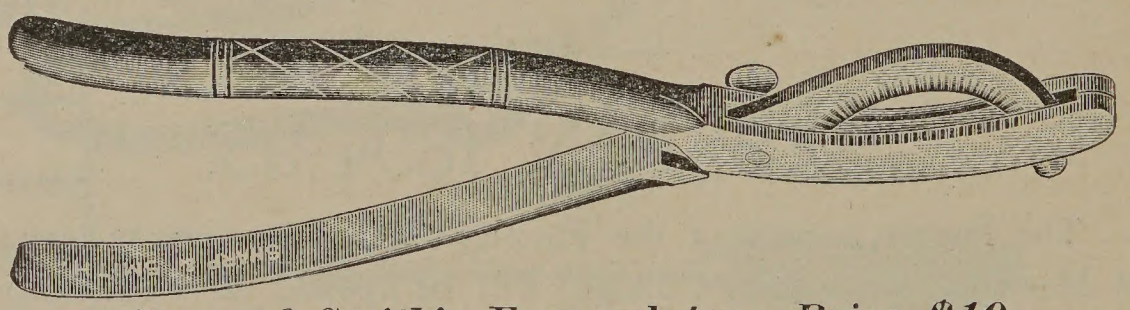
Manufacturers of VETERINARY INSTRUMENTS

73 RANDOLPH STREET, CHICAGO.

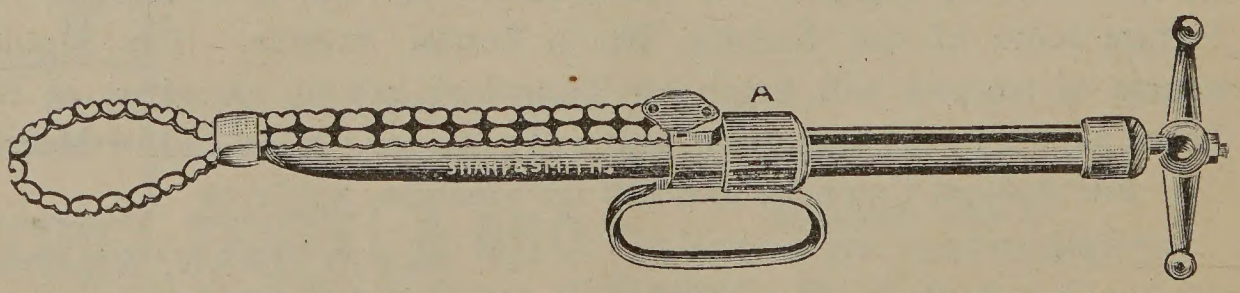


Sharp & Smith's Improved Mouth Speculum.

The teeth fit into semi-lunar cups so made that they will fit any mouth, and when placed in the mouth like a bit, can be opened instantly. It is also provided with bars to take the place of the cups when operations are to be made on the incisor teeth. ***Price, $10.***



Sharp & Smith's Emasculator. Price, $10.



Sharp & Smith's Improved Ecraseur. Price, $12.

THE HALLANAN VULCANIZED RUBBER HORSESHOE PAD.

A Mechanical Production Combining a Rubber Pad with Canvas Firmly Secured to a Sole-leather Back.

By this means securing for the horse an even distribution of the weight over the entire solar surface of the foot.

It does away with the necessity of heel and toe calkings.

It permits the use of a lighter shoe with narrower web, and thus enables the shoer to maintain closer adjustment of the shoe to the crust of the foot, while the pad, made of rubber, lessens the concussion and jar, and at the same time divides the force and weight over the entire ground surface.

A full shoe is allowed by its use, and the objection of too much direct heel pressure avoided.

It does away with the need of sharpening in winter weather and gives confidence to the horse on icy pavements. Where asphalted streets exist it is a safeguard from slipping and the severe strain from concussion.

For weak, contracted, or low-heeled feet they, while aiding the removal of these defects, enable constant use of the animal.

These pads will last from two to three months. They have met with the approval of many of the most prominent veterinarians, horsemen, and horse owners in New York, Brooklyn, Philadelphia, and wherever placed before the public.

For testimonials and any other information, write or call upon

M. HALLANAN,

Inventor, Patentee and Manufacturer,

190 West 4th St., New York City.

COALTAR SAPONINÉ
(LE BEUF)

EMULSION OF COALTAR

FOR

Greasy Heels
Skin Diseases
Ulcers and
Wounds of

HORSES

Foot and
Mouth Disease
Sore Udders of

CATTLE

Foot Rot and
Erythema of

SHEEP

Mange, Eczema
Auricular
Catarrh and
Canker and all
Skin Diseases
and Sore Feet
of running

DOGS

An Emollient and

Antiseptic Dressing

of great purity which has been successfully used in the principal Hospitals of France in the treatment of abrasions, contusions, burns, gangrene ulcerations, suppurative wounds, skin diseases, inflammations of the mucous surfaces and wounds of every description. It is not only

A Succedaneum for Iodoform and Carbolic Acid

or Bichloride Solutions, but is superior to them because it has no toxic action, is not irritating or caustic and has no offensive odor

Write for
"Coaltar Saponiné
—Le Beuf"

J. Beuf & Cie Beuf

The inventor's signature is printed on each genuine package

Send for pamphlet to

E. FOUGERA & CO., NEW YORK

Sole Agents for the United States

Mention this Journal

Chicago Veterinary College.

(Founded 1883.)

Course consists of Two Sessions of Six Months each, commencing the First Week in October, yearly.

The success attained by this Institution can only be ascribed to its superior methods of teaching. Its clinical advantages are unsurpassed.

For prospectus and full information, address the Secretary,

JOSEPH HUGHES, M.R.C.V.S.,
2537-39 State St., Chicago.

ONTARIO VETERINARY COLLEGE,

44 to 46 Temperance St., Toronto, Canada.

Most Successful and Commodious Veterinary College in America. All experienced teachers.

Patrons—Governor-General of Canada and Lieut.-Governor of Ontario.

Session begins October 16, 1895. Apply to Principal,

ANDREW SMITH, F.R.C.V.S.,
Toronto, Canada.

FORDHOOK KENNELS and POULTRY YARDS.

ROUGH-COATED SCOTCH COLLIES.

TWENTY-TWO BREEDS OF POULTRY.

Our Kennels are among the largest in America, devoted exclusively to the breeding of Collies and embrace the best blood in England and America.

Our manual of Thoroughbred Live Stock, describing our Poultry, Collies, etc., mailed free on application.

Address, ***W. ATLEE BURPEE & CO., PHILADELPHIA, PA.***

ADVERTISING RATES.

	One Month.	Three Months.	Six Months.	One Year.
ONE PAGE	$10.00	$25.00	$45.00	$80.00
HALF PAGE	7.50	15.00	25.00	45.00
QUARTER PAGE	5.00	10.00	15.00	25.00
INSIDE COVER PAGES AND FACING INSIDE COVER				100.00
OUTSIDE COVER				125.00

Published Monthly, at Three Dollars ($3.00) a year in advance.

Address, JOURNAL COMPARATIVE MEDICINE AND VETERINARY ARCHIVES, 3452 Ludlow Street, Philadelphia.

IT IS AGREED, That the Editors may cancel this contract and advertisement if the payments therefor are not promptly made as above, and collect for the actual insertions at their rates for the shorter time.

☞All matter for advertisements is subject to the approval of the Editors.

Copy of JOURNAL will be sent advertisers promptly at each issue.

PLANTEN'S

For Oral and
Rectal Medication.

Improved Empty
Veterinary

CAPSULES

ORAL: ½, 1, 2, 3, 4, 8 and 12 drachms. RECTAL: 1½, 1, and ½ ounce.

TRIAL BOX BY MAIL, 25 CENTS.

CAPSULED HORSE BALLS. We make a specialty of putting up Private Formulas.

ESTABLISHED 1836.

H. PLANTEN & SON, 224 WILLIAM STREET, NEW YORK.

WILLIAM R. JENKINS,

851 & 853 Sixth Avenue,

N. W. Corner 48th St., *NEW YORK CITY.*

PUBLISHER AND IMPORTER OF

VETERINARY BOOKS

AND WORKS TREATING ON

HORSES, CATTLE,
SHEEP, SWINE,
AND DOGS.

Largest Stock in the United States.

Complete Revised Catalogue, including List of New Publications, sent on application.

C. M. MOSEMAN & BRO.

SOLE AGENTS FOR

ELLIMAN'S EMBROCATION,
COLES OSSIDINE,
MANHATTAN OINTMENT,
PERRINS LEG WASH,
STEVENS OINTMENT,
LT. JAMES BLISTER,
KITCHELLS LINIMENT,
QUINN OINTMENT,

All the Celebrated Preparations of W. Clark, of Oxford Street, London,

AND ALL OTHER GOOD

Horse Remedies of English, French and American Production.

EVERYTHING FOR YOUR HORSE—AND QUICK.

WAREROOMS, 128 CHAMBERS STREET, NEW YORK.

THE JOURNAL

OF

COMPARATIVE MEDICINE AND

VETERINARY ARCHIVES.

VOL. XVI. *APRIL*, 1895. NO. 4.

ADDRESS AT THE COMMENCEMENT OF THE NEW YORK COLLEGE OF VETERINARY SURGEONS.

BY PROFESSOR JAMES LAW.

TO-DAY you are welcomed into the ranks of a profession of honorable aim and of nearly boundless possibilities. Hitherto you have been, as it were, in the parental nest, tended with unremitting care by a most assiduous *alma mater*, who fed you with the pabulum best adapted to your growth and evolution, and lovingly watched over your development of scientifie muscle and the spread of your professional pinion. Now you are adjudged capable of independent effort, and are sent forth, alone, to face alternately the generous sunshine and the winter's blast. In this vital crisis of your life I have the privilege and honor of offering you a few words of encouragement, and perhaps of suggestion, which may be of some help in this important transition period.

You have been individually scrutinized, and the jury of award has pronounced you capable of alone facing the storms and sunshine of the world—capable of entering on personal work for the welfare of the race.

To a class which has just passed through the trying curriculum of a college course I need not say that the diploma just awarded you is not a guarantee of perfection. You feel more intensely than I can impress upon you that you have only had time to grasp the general principles of the science, and how

much remains to be learned before you can administer to the sick and suffering with clear intelligence and conscious power. The days are past when the barber surgeon exhausted remedial applications by the letting of blood, or when the farrier, with fleam and drenching horn, administered to the highest needs of the lower animals. Yet these days are only a short remove from the present, and those of us who have reached middle life can recall doctrines and practices which might well be conceived of as lingering shadows of those benighted times.

Formerly all occult diseases of the horse's forelimb were referred to the shoulder or chest, until early in the present century James Turner let in the light by demonstrating the frequency of lesions of the pedal sesamoid pulley. I have myself been taught that that contagious scourge—the rinderpest—was simply the result of unwholesome fibrous food and of its impaction in the omasum. I was further instructed that rabies was due to atmospheric conditions, and that glanders could be caused by overwork, close confinement, and under-feeding. Still more recently—and as it seems but yesterday—tuberculosis was held to be generated by impure air, and some belated beings are still groping about in the dense fogs of this opinion.

In those days a brilliant theory did duty for a sound demonstration, a plausible presumption for attested fact. But our lot has fallen on a new era. The medical idol of yesterday falls under the sledge-hammer of the iconoclast of to-day—the time-honored doctrine is treated with suspicion and skepticism, and the question is no longer "what say the authorities?" but "what is the truth?" The doctrines founded on *a priori* reasoning are at best only tolerated, while those that rest on well-observed facts and otherwise unexplainable experiment are alone accorded the meed of stability. We have learned to doubt and analyze, to question nature as to her secret processes, and to hold no doctrine, however hoary and respectable, as more certain than the evidence on which it rests. As we take the evidence of the eye, of the microscope, of the spectroscope and polariscope, of the test-tube and crucible, of every sense in its turn, of the thermometer and electric machine, of reflexes and interdependent functions, of all the aids that physics can furnish, we feel that we come nearer and nearer to the absolute truth, but the complexity of life processes increasingly warn us how much there is beyond our clearest vision, and at the same time encourage us with the thought of how many new worlds remain to be dis-

covered and how many new fields to be conquered by the earnest, well equipped, and clearheaded worker.

Nor is the old knowledge to be held as in any sense obsolete. Our new discoveries in the regions of microbiology and disease-germs do not altogether exclude many unhygienic influences which have long been recognized as modifying the severity and spread of epizootics. We know, for example, that tuberculosis and glanders are respectively due to their particular bacilli, without which neither disease is possible. But we do not forget that impure air, insufficient food, and debility are still most potent accessory causes of both these affections. Lack of sunshine and ozone, lack of muscular exercise and vigor, and the presence of a hereditary predisposition are no less conducive to tuberculosis to-day than they have been in time past. If we have discovered a cause which is more essential, it does not in any sense abolish those other and accessory causes which were so patent in the estimation of the many careful observers of other days. It is true that we can explain many of these secondary causes through the known action of the inimical conditions on the bacteria and their products, and that our knowledge is thereby founded on a more substantial basis; but perhaps this should lead us to venerate rather than despise the great minds of the past which connected the primary accessory cause with the final pathological result, though unable to see the intervening links in the chain of causation.

Another important thought is that the new science of bacteriological pathology has opened a field of investigation into which we have as yet done little more than enter. We have learned much, it is true, of the morphology and life-history of most of the more prominent disease-germs; we know something of how they comport themselves in different fields of culture, in different genera of animals, and in the same germs under varying dietaries and environment, in neutral, alkaline, and acid mixtures, and under other dissimilar conditions of life; we have some information as to their poisonous products, their ptomaines and toxins; we know something of their chemiotactic powers and their susceptibility to the attacks of phagocytes and protective proteids; but we know as yet comparatively little of the interaction upon each other of the ptomaines and toxins or of the non-poisonous products of different bacteria. It is only in a few isolated cases that we can predict what will be the probable result of the presence in the same animal system of any two different species

of bacteria at once. We cannot tell when the two will mutually act as antidotes of each other and when the convalescence and mutual reaction of their products will produce a deadly poison. Here there remains an almost illimitable field as yet practically unexplored. On the other hand, we know that the leucocytes of the body attacked are stimulated to the production of an increase of defensive proteids, globulins, nucleins, alexins, or antitoxins, and we have learned to solicit the extra production of these both for protective and curative purposes, but we are as yet far from an adequate knowledge of the limits of their availability or usefulness.

Some prominent landmarks stand out boldly in the sea of comparative obscurity:

1. Whenever a disease is self-limiting, so that it either kills its victim or results in a speedy and perfect recovery, with immunity from a second attack, we can, by the introduction of the toxic products of the germ, stimulate to the excessive production of antitoxins, which will confer immunity on the animal so treated.

2. When an animal is already infected with such a disease the antitoxins derived from an already immunized animal may be employed as an accessory curative agent.

Of diseases of this class occurring among our domestic animals may be named rinderpest, lung plague, anthrax, rauschbrand, strangles, canine distemper, rabies, tetanus, and a variety of others.

A number of other contagious diseases are productive of a less certain and durable immunity, and in dealing with these we cannot hope for a corresponding success by this method. A malady which may last for a number of years in the same animal system, like tuberculosis or glanders, or which recurs again and again, like aphthous fever or influenza, cannot be thus treated with any confidence in a permanent immunity. At the same time, this need not forbid the use of antitoxins taken from an immunized animal, as accessory curative agents, or as a temporary, if even only as a partial, prophylactic. Our weakness here is in our inability to stimulate the leucocytes to the *permanent* production of the protective proteids in sufficient amount.

Here, then, we are still confronted with uncertainty and imperfect success, and it remains to be seen whether the future will open up new methods which are as yet obscure and untried.

So, also, in regard to the use of the native antitoxins of insusceptible genera of animals, and so with the extracts of special

parenchymatous organs that seem to be more or less inimical to particular pathogenic bacteria. How far these may be used as simple curative agents, and how far they may be produced in the body as preventive agents, it is for the future to show.

I need not follow this attractive subject farther. Its limits are as yet far beyond our ken, and what has been already revealed and the great questions that still remain for solution may well inspire us to enthusiasm in the cause of progress. It requires no prophet to foretell that in the near future, when this field shall have been a little further exploited, potential agencies as yet undreamed of by the average layman will be employed in prophylactics and therapeutics, so as to completely eclipse the most brilliant advances of the past. In the theory of the clear-sighted scientist many of these developments have already assumed definite form, and we may well believe that time and opportunity alone are wanted to insure their practical demonstration.

This is a field in which there must arise a great demand for the help of the comparative pathologist in the near future. Such help is needed in the pathological and experimental laboratory, in the flocks and herds, on our farms and ranges, in the stockyard and abattoir, in the creamery and the market.

An enlightened public sentiment must sooner or later transfer all such duties from the mere political placeholder to the man who has been educated to act with the intelligence and clear insight of the scientist in such matters, when a special sanitary duty will be intrusted only to the sanitarian who is a specialist in that field. This time has not yet been reached, however, and we still see public prints inveighing against the rapacity of the veterinarians, who are supposed to be placehunters when drawing attention to sanitary needs.

But while a rational veterinary sanitary work is still a dream of the future, the idea is more substantial and its realization looms nearer than ever before. There is a gradual awakening of the public mind from the hypnotism which has long oppressed it in the matter of popular government. The people begin to look beyond the squabbles of party and the mere struggle for personal and partisan aggrandizement, and to demand a civil administration, the first object of which shall be the effective service of the people, and not a mere spoil of partisan success. The tide of public political conscience is rising, and the reform of our civil service in the direction of ability and efficiency must be allowed to advance until it shall

pervade all departments of our administration. The time is past when it might have been stemmed and turned back, and the man or the party which would seek to check it must submit to be swept away and submerged in its onward rush.

When that tide shall have risen to its full the specialist in veterinary sanitary knowledge will be called on to fill the breach for which he has fitted himself, and to protect the flocks and herds and, indirectly, the community from the dangers that beset them in this direction.

Here I must be borne with, if I seem to leave my subject, to offer one word of political advice. You go forth, not as veterinarians alone, but as citizens of this great Republic. Let your profession and yourselves be honored and respected through the position which you assume as citizens. Never condone a flagrant evil or wrong committed by any political party; never contribute actively or passively to any corrupt exercise of the ballot to any partisan distribution of spoils, or engineering of a job, nor to anything else in short that threatens to oppose or hinder a sound administration for the best welfare of the people. Never in your own hearts allow the thought of personal or party advantage to obscure the principles that all public office is a most sacred public trust. If you should fail in this respect, you ought no longer to complain when all your laboriously acquired knowledge and skill are ignored, when your special fitness for veterinary sanitary work is overlooked, and when as the result of a would-be sanitary movement brought about, perhaps, largely, by your own efforts to educate the community, you see the offices filled by political dependents who have no education, no experience, no such skill as to fit them for discharging the duties assigned them. If by your indorsement of corruption or maladministration you have contributed to foul the political stream at its source, you have no right to blame others if the stream proves to be impure below. If by passive acquiescence or active work you have contributed to undermine the sacredness of a public trust, you must take the natural consequences, even if these should come in the form of the waste of public money in alleged sanitary reforms which become but prostitutions of the name under unfit appointees, to the contempt of sanitary science and the discredit of the veterinary profession and its practitioners. If you aim at a public office with sanitary duties, you must do your best to acquire a thorough efficiency in all that will fit you for the discharge of such duties.

Then when the office seeks *you* you will be prepared to fill it with personal credit and with profit to the public.

Veterinary sanitary science is especially a question of political economy, and those who would officer any veterinary sanitary organization with laymen fall back on the necessity of having business men, financial experts, to direct the undertaking. The same principle is often invoked in the case of medical appointments, and sanitation and philanthropy are alike balked through an administration which is unacquainted with the medical questions involved. It is well, therefore, that in furbishing your weapons for work in this field you should give a thorough study of the economic questions involved, and lay before the people the results of such exhaustive investigation. Veterinary sanitary work is a Christian and humane movement, but it is even more directly and primarily an economic undertaking. You must present it to the public on all sides as a means of protecting and husbanding human health and life, and as a means of cutting off the constant losses in our live stock possessions and of increasing the number and value of our flocks and herds.

In sanitary and preventive medicine there is a very wide field which must open ere long to the veterinary expert. The immense numbers and value of our live stock may well illustrate this. According to the census of 1890, our solipeds and meat-making quadrupeds kept on farms in the United States exceed 160,000,000 head, exclusive of the large numbers kept in cities. What a field this presents for sanitary work in the matters of improvement of general hygiene, in the suppression of contagia, in the restriction and cure of parasitisms, in immunizing and other prophylactic treatment, in meat inspection, and in the doing away with enzootic poisons! It is quite true that as yet the greater part of such work is prospective rather than real. But let the expert show the value of such work and his fitness to undertake it, and little by little his services will be availed of *here* as they have long been to a certain extent on the other side of the Atlantic.

Coming to our own State of New York and to one single contagious disease in which the cities have, if possible, a more direct personal interest than the stock owner—tuberculosis—we find a bovine population of 2,328,015 head, with, according to estimate, 5 per cent. of them tuberculous. This percentage at $20 per head would mean $2,328,000 of money value lost or deteriorated because of one contagion. And so long as we

leave this contagion to go on preying on the herds we must look for a constant succession of new cases, so that the losses are continuous and permanent. If now we glance at the human mortality from tuberculosis, amounting to 13 per cent. of all deaths, and to which the disease in animals materially contributes, we find reason enough for an active crusade in expert hands against this plague of our flocks and herds.

But all of you will not aim at this as your life's work, and in veterinary medicine there is of necessity a large amount of specializing in practice. It is not necessary for us, as it is for the physician of man, to map out a single body and assign different organs to different experts. From the great variety of live stock it is open to each of us to specialize on some particular genus in the medicine of which we may strive to excel. According to the location selected by us, indeed, we shall be compelled to devote ourselves to one of the genera more than another. If settled in a city, we become, of necessity, mainly or exclusively physicians of the horse, whilst if in a country dairying region we must give our special attention to the cow. Wherever the wealth of the district is concentrated in a particular genus of live stock there our services will be most in demand, and to fill that demand in the most acceptable and profitable way to our employers we must subordinate our knowledge, skill, and energy.

In the cities you will be called upon to examine horses for soundness, and for no item of your duties should you prepare yourselves more carefully. Woe unto you if you overlook a cataract, a carious tooth, a laryngeal paralysis, a drug-concealed lung disorder, an unsoundness of back or lungs, or any other depreciating disqualification. Let it be once supposed that you have been in collusion with the seller to wrong the buyer, and your prospects for success in that quarter will be seriously impaired. To fill the rôle of examiner for soundness you must be most accomplished in anatomy, physiology, and pathology; and in addition you must be a man of quick observation and just judgment, and one whose character is in every respect above suspicion.

If you are in a stock-raising district, you will require expert knowledge and skill in other directions to which the city veterinarian is a comparative stranger. You should know the differences and relative economic value of different geological formations and soils, the approved modes of culture, the nature

composition, and dietetic values at different stages of growth of the various fodder crops; the relation of different foods to health, growth, development, gestation, milk-producing condition; the balancing of rations for the different animals under the different uses to which they are put; the selection of individual animals for breeding, for draught, for carriage, for sport, for dairy, for wool, and for meat products; the relation of live stock to the maintenance of a permanent fertility of the soil, and to the improvement of that which is less fertile; the special hygiene of gestation and suckling, and a host of other points that conduce to the prosperity of your employers and of the nation.

In short, you must identify yourself with the advancement of the public weal in all that relates to the live stock industry, and so far as your education can be made conducive to such progress. If you settle down and merely wait for cases of sickness and lameness that you may treat, and operations that you may perform, you will come far short of your duty and opportunity, and you may expect that you will come short also of obtaining the esteem, confidence, and employment that should otherwise be your reward. Wherever a door opens it must be your study to be ready to enter it. If in a sheep district, you should concern yourselves with all that will conduce to improvement in wool and mutton, whether in breeding or dressings, as well as in measures to guard them against epizootics and parasitisms. If in a pork-raising district, your attention will be called to the plagues that now sweep away hogs to the value of scores of millions annually.

You will best approve yourselves true physicians by cultivating your talents and education in the direction of the local demand and by devoting them in the best way possible toward the filling of this demand. It is in this respect of adaptability that education and knowledge tell, and it is here that their exercise is to be recognized and respected. To the mere empiric all phases and stages of a disease which goes under a given name present alike the demand for his one remedy for that disease. In the hands of the physician the remedy will be adapted to the exigencies of the case and the idiosyncrasy of the patient, no matter what may be the name of the malady, and the failure of one remedy will not be the discomfiture of the practitioner, but only the indication for another which may operate unaffected by idiosyncrasy or special condition. So in

the general field the uneducated man is helpless for any real good, while he who is well grounded in science can prove himself a valuable adviser and a guide in lifting the whole community into better methods, in stimulating to a new prosperity, and indirectly in laying a foundation for his own future success in the increasing success of his employers.

I do not say that you will find yourselves fitted, without further effort, to fulfil all these duties. Far from it. You have, as it were, served an apprenticeship. You have been taught to use your tools, but when you go forth from your alma mater you must not consider that you are any the less students, nor must sloth nor self-indulgence be allowed to divert your eyes from the height of more perfect knowledge and skill toward which you aspire. In these days of rapid progress in medical science, to stand still is to retrograde, and to retrograde is to sacrifice the vantage-ground on which you started, and to see other younger and less favored men distance you in the race.

If you would be worthy members of your profession, you must never let the student spirit subside. You may pass from youth to age, your hair may whiten and your step lose its firmness, but the spirit of the student must remain with you fresh and green.

> The patriarch pupil must be learning still
> And dying leave his lesson half unlearned.

Thus will your rich experience and treasured knowledge be made subservient to sounder views and better practice, and thus will your counsel become more and more valuable with advancing years.

You have now been intrusted with the tools; you have been given the right to enter the field of labor; but your course must still be like that which you have just completed—a progressive one—every new step based securely on a foundation already laid. As osteology had to precede arthrology and myology; as a knowledge of the macroscopy and microscopy of the tissues had to precede the study of their functions; as a thorough acquaintance with structure and function had to go before the study of pathology, and as etiology and pathology had to prove stepping-stones to therapeutics, so now you have got the means of study and of successful advance by yourselves, and it is for you to put that power to a good and effective use. Much will depend on the soundness of the founda-

tions you have already laid; not less will depend on how you will hereafter build on these foundations. Of this rest assured, that you cannot afford to lose sight of a single phase of the curriculum through which you have just passed. As you pass into active practice you will find the need for one and another of those branches of knowledge which you may have been at times tempted to look upon as unnecessarily abstruse, speculative, or disconnected from your lifework. To keep abreast of science you must be in touch with contemporary literature, and in grasping every new advance you will feel the need of some old branch of your knowledge.

In this comparatively new country, where veterinary medical knowledge has been to a large extent a desideratum, there are many special phases of disease as yet unrecorded, and it is only by the common contributions of all members of the profession that our science can be advanced in this direction.

I wish to say one word as to tact with animals. If any of you have been city boys and little acquainted with the habits of live stock in health, I would advise him to do his best to overcome such disadvantage. Your employer cannot always tell whether your medical counsel or your prescription is right or wrong, but he can always tell whether you are handy or awkward among animals. If you are at ease in dealing with them, it will always be set down to your credit; if you are awkward, it will as certainly detract from the confidence in which you should be held, and you need not be surprised if the quack, with bold effrontery and ready tact in handling animals, should succeed in gaining support in spite of his profound ignorance of disease and his absolutely destructive prescriptions. A knowledge of men and of animals, and tact in dealing with both, are usually as essential to success in practice as is the most profound knowledge of medical science.

Again, in his dealing with animals the veterinarian must be pre-eminently a humane man. A great proportion of our professional duty consists in the relief of pain, and he who aims at this should sedulously cultivate the spirit and habit of humanity. The firm hand and the gentle manner, the "Suaviter in modo et fortiter in re" should be his essential characteristic. I do not say that he should hesitate to inflict a temporary pain for the relief of a continuous or frequent pain. I do not say that he should hesitate to remove from animals useless organs which are sources of constant loss and of much danger and suffering

to both man and beast. But I repeat that all his dealing with dumb animals should be qualified and ennobled by humanity. When he can by local or by general anæsthesia obviate acute suffering his patient is entitled to this consideration, and the same consideration is due to the feelings of the owner, whether the subject be a pet dog or a family horse or cow. A tender consideration for the patient is no less important for its reflex action on the practitioner himself. Kindness and consideration for all others in suffering tend to a calm, well-balanced mind, and favors that equipoise and sound judgment which should characterize the accomplished physician. The irritability of a roughly-used patient, on the other hand, conveys itself without fail to the attendant, ruffles his spirit, disturbs his balance, and interferes with the calmness and soundness of his judgment. A shrewd breeder of fine horses said recently that he wanted no one about his stable who did not sleep soundly and well at night. The nervous and irritable man reacts on the high-strung horse; the irritated horse reacts on the irritable man, and both suffer in consequence. The late Mr. Edwin Thorn allowed no employé to speak in a loud voice in the stable, and his horses were models of good temper and gentleness. His men, I need not add, were equally the gainers.

You know how an irritable horse will recognize the touch of the nervous driver as conveyed through the reins and bit; how the cow will withhold her milk from the rude, inconsiderate, or cruel milker, and how the sheep will thrive in the hands of the calm, deliberate shepherd, but will fall off under the care of the merciless driver.

Calmness, temperance, self-control, humanity make for nobility of character, and this is the goal at which we all should aim. This it is that will elevate the man and his profession in the public mind, and this will secure that recognition and status to which an honorable profession is entitled.

It only remains for me to wish you God-speed in your chosen career. Let your course be true, your purposes noble, your lives worthy. Set to yourselves a high aim in your scientific, your professional, and your moral career. Let your names stand out as beacons of worth, of trust, and of character, esteemed by the community, and cherished by your profession and your alma mater.

THE ANATOMY OF THE LARGE AMERICAN FLUKE (*FASCIOLA MAGNA*) AND A COMPARISON WITH OTHER SPECIES OF THE GENUS FASCIOLA, S.ST.

BY CHAS. WARDELL STILES, PH.D.,
ZOÖLOGIST, BUREAU OF ANIMAL INDUSTRY.

CONTAINING ALSO A LIST OF THE CHIEF EPIZOÖTICS OF FASCIOLIASIS (DISTOMATOSIS) AND A BIBLIOGRAPHY OF FASCIOLA HEPATICA.

BY ALBERT HASSALL, M.R.C.V.S.

(Continued from vol. xvi., 1895, page 147.)

COBBOLD ('79, pp. 393–400), in discussing the parasites of elephants, refers a number of times to *F. Jacksoni:*

The fifteen specimens possessed by Huxley, mentioned above, were removed from Burmese elephants in the summer of 1868 and sent to him from Rangoon, with a statement that they caused an extensive and fatal disease in Burmah; an historical review of this species up to 1879 is given; extracts from letters by General Hawkes (May 12, and July 30, 1875) are given regarding this parasite; as these extracts are very interesting, and to a certain degree important, it may be well to quote them:

"My attention has been recently directed to a very unusual mortality of elephants at this station. Out of twenty-eight elephants under my charge no less than twelve have died within the last sixteen months, whereas the average annual mortality has been hitherto only two per annum out of thirty-eight in our establishment. In every case of death there appeared to exist serious organic disease quite sufficient to account for such death, but as the mortality increased I had a post-mortem examination made in each case; and although here also organic disease sufficient to account for death was present in each case, yet in every one of these elephants we found liver-flukes in greater or less abundance. The only other published notice that I have been able to find of it is contained in a letter to a newspaper dated 'Rangoon, July 16, 1867, and is signed R. B.' In this letter the unusual mortality of seven elephants in about fifteen days is attributed to the presence of this liver-fluke, the two other parasites (*Amphistoma Hawkesii* and *Ascaris lonchoptera*) being also present in the intestines. Now in every case at which I was present *flukes were found in greater or less numbers* in the gall-ducts of the liver, and the *Amphistoma* was also as constantly present in the intestines, the soorti (*Asc. lonchoptera*), contrary to the general experience of the elephant attendants, being less frequently met with, though from its color and slender shape it is not so easily detected among the huge masses of fæces as the larger *Amphistoma.*"

Both *Amphistoma* and *Fasciola Jacksoni* are reported in a case in the Secunderabad epizoöty. In a report of a later case by the veterinary surgeon (W. S. Adams) is found this statement:

I carried out the post-mortem examination with special reference to inquiry as to the probability of mortality among elephants at this station being of parasitic origin. This was suggested to me by the former case. The post-mortem appearances differed in every respect. There were flukes in the liver, but in no great quantity, and the structure of the liver was sound. Although not assisted by this case in attributing the mortality to parasitic origin, I am strengthened in my opinion that the death of the previous elephant was due to disease caused by the presence of the liver-fluke.

Von Linstow ('78, p. 45) records three species of liver-flukes (*D. hepaticum* Abildgaard, *D. elephantis* Jackson, and *D. Jacksonii* Cobbold) in *Elephas indicus*. Evidently the papers in which Cobbold stated that these recorded cases have reference to but one species have escaped his notice.

Cobbold ('82, No. 11, pp. 242–246, Fig. 11, Pl. 24, Fig. 12) gives a new diagnosis of the species now under consideration:

"Body flat, orbicular, often folded toward the ventral surface, smooth to the naked eye, but armed throughout with numerous excessively minute dermal spines, which are larger above than below. Oral sucker terminal, small. Ventral sucker large and well forward. Reproductive papilla in the middle line, and placed considerably above the upper lip of the acetabulum; intromittent organ of great length. Digestive apparatus branched, its ramifications ending in cæcal terminations, which occupy nearly the whole extent of the body internally; œsophageal bulb distinct. Length, ½ to ⅝ of an inch; breadth, ⅓ to ½ of an inch. *Hab.* Biliary ducts and duodenum of *Elephas indicus*."

Cobbold again takes occasion, as he did many times before, to insist upon the priority of the generic term *Fasciola* for flukes with dendriform intestines and to the injustice of using the term *Distoma* for these flukes; he claims that spines are present in *F. Jacksoni;* they measure 1/700 to 1/750 of an inch long by 1/2000 of an inch thick (basal diameter); they are independent of the ridges described by Fitz, and are regularly arranged at equidistant points; in *F. hepatica* the spines are twice as long and three times as broad; the general dendriform arrangement is more or less similar in different specimens, but individual variation is naturally found; in specimens preserved in alcohol the greenish tint, due to bile, of the fresh specimen is not entirely destroyed; eggs are oval, 1/230 inch long by 1/330 inch broad, provided with a lid at one end; sexual openings in a depression, occasionally well marked, however, a papillary eminence can be distinguished in the centre of the depression.

Braun ('93, p. 910) places this species in the genus *Distomum*, sub-genus *Cladocœlium*, and remarks (p. 376) that Fitz has mistaken the vitellogene glands for the ovary. I cannot quite agree with my distinguished German colleague in this criticism.

Fitz evidently recognized the vitellogene glands, and he must also have seen the ovary. Whether he has also mistaken some other portion of the genital organs for a portion of the ovary is difficult to state, as his description is open to criticism, and as he fails to give figures.

Specific Diagnosis.

F. Jacksoni Cobbold, 1869. Body, 12 to 16 mm. long by 8 to 12 mm. broad, flat, orbicular, often folded ventrally, smooth to naked eye, but armed throughout with minute spines, dorsal spines larger than ventral spines. Oral sucker terminal, small; ventral sucker large, well forward; genital papilla anterior to acetabulum; penis very long. Pharynx large, œsophagus (after C.'s figure) absent; intestinal cæca, dendritic, median branches long. Other organs same as *F. hepatica.*

V. The generic name Fasciola.

It is very generally admitted that the generic term *Fasciola* has priority over the term *Distomum*, and yet the latter term in some countries, at least, has entirely supplanted the former. In German literature of the present day *Fasciola* is hardly ever used. In French literature *Fasciola* is only occasionally met with. In English and American writings we find the term *Fasciola* more frequently than in the writings of other countries, yet not so frequently as the term *Distomum*. As I now take up the term *Fasciola*, it may be well to briefly review the generic history of the four flukes considered in this paper.

Fasciola was first proposed by Linné in 1746, and was also used in the tenth edition of the *Systema Naturæ* (1758). Linné included in the genus not only the liver-fluke, but also *Planaria* and *Schistocephalus*. The name *Distoma* Retzius was not proposed until 1786, and accordingly should not under any circumstances be allowed to supersede *Fasciola*. Goeze (1782) placed *F. hepatica* (the only species of the genus *Fasciola* s.st. known at the time) in his *Naturgeschichte* under the name *Planaria latiuscula*. Zeder reverted to *Distoma*. Dujardin[1] (1845) accepted the generic term *Distoma*, and proposed a division of the flukes into nine sub-genera. His first sub-genus (*Cladocœlium*) contained *D. hepaticum* as the type and only species, and was characterized by the ramified intestinal branches ("Intestin à

[1] Histoire Naturelle des Helminthes. Paris, 1845. *Vide* p. 388.

deux branches rameuses"), in contra-distinction to all other distomes known to him, the rest possessing simple intestinal cæca.

Fasciola hepatica continued, however, to be known under the generic terms *Fasciola*, *Distoma*, or *Distomum*, according to the individual tastes of the various authors. Blanchard and Cobbold upon several occcasions insisted upon the priority of the term *Fasciola* for flukes of the type of *F. hepatica* (*i. e.*, Dujardin's sub-genus *Cladocœlium*), and the latter, in 1858, published a *Synopsis of the Distomidæ*, in which the genus *Fasciola* is adopted for *F. hepatica* and *F. gigantea*, and in 1869 the species *F. Jacksoni* was added to it. As generic description of *Fasciola* Cobbold gives "the presence of a branched intestinal canal divided into numerous cæcal appendages." For the other distomes Cobbold created several genera, but few of them have been generally adopted, and they need not enter into the discussion here, for we are interested at the present moment only in flukes of the type of *F. hepatica*. Leuckart, in his *Parasiten des Menschen*, accepted *Fasciola* only as a sub-genus of the genus *Distomum*, giving as sub-generic diagnosis the following:

"Body[1] of considerable size, broad and leaf-shape, provided with conically projecting anterior portion. The uterine loops are arranged almost like a rosette, posterior to the acetabulum. Intestine racemose and highly developed. The testicles are also racemose and highly developed, and occupy the entire middle field of the posterior half of the body."

Leuckart places in this sub-genus *D. hepaticum*, *D. Jacksoni* and *D. giganteum*.

Monticelli[2] then reverted to the sub-genus *Cladocœlium*, and quite recently Max Braun[3] adopted (evidently only provisionally) a modification of Dujardin's system, in which he admits eight of Dujardin's sub-genera, including under *Cladocœlium* ("Darm mit zwei verästelnden Schenkeln") *D. hepaticum* L., *D. giganteum* Cobbold, *D. Jacksonii* Cobbold, *D. magnum* Bassi, *D. delphini* Poir., *D. palliatum* Looss, *D. Rochebruni* Poir., and *D. oblongum* Cobd. He accepts the generic name "*Distomum* Retz, 1776," remarking (p. 894) that the name "*Fasciola* L. 1746, enthält

[1] Körper von ansehnlicher Grösse, breit und blattförmig, mit einem zapfenartig vorspringenden Vordertheile. Die Uterus-windungen hinter dem Bauchsaugnapfe fast rosettenartig zusammengelegt. Darm verästelt und von mächtiger Entwicklung. Ebenso die Hoden, die mit ihren Zweigen das Mittelfeld der hintern Leibeshälfte vollständig ausfüllen.

[2] Saggio di una morfologia dei Trematodi. Napoli, 1888. Unfortunately this paper is not at my disposal, but I quote from Blanchard and from Braun.

[3] Vermes: Bronn's Klassen und Ordungen, etc., p. 909.

Distomum, *Planaria*, und *Schistocephalus* und ist nach Abtrennung der beiden letzten für die Distomen fast ganz ausser Gebrauch gekommen."

Stossich,[1] in a revision of distomes, raised the sub-genus *Cladocœlium* to generic rank, and included in it the species *C. hepaticum*, *C. elephantis*, *C. giganteum*, *C. delphini*, *C. palliatum*, and *C. Rochebruni*.

Summing up these statements the generic synonymy of flukes of the type *F. hepatica* would be as follows:

1746 et 1758, *Fasciola* Linné.
1782, *Planaria* Goeze.
1786, *Distoma* Retz.
1800, *Distoma* Zeder.
1809, *Distoma* Rud.
1845, *Distoma* (*Cladocœlium*) Duj.
1845, *Fasciolaria* (Anonymous).
1850, *Distomum* Dies.
1858, *Fasciola* (Linné, pars.) Cobbold.
1884, *Distomata* Taylor.
1888, *Distoma* (*Cladocœlium*) Monticelli.
1889, *Distomum* (*Fasciola*) R. Lkt.
1892, *Distomum* (*Cladocœlium*) Braun.
1892, *Cladocœlium* Stossich.

It is perfectly evident from the above that Retzius' name *Distoma* or *Stossisch's* generic (Dujardin's sub-generic) name *Cladocœlium* cannot be used instead of *Fasciola* without a total disregard for the law of priority. Accordingly, if the heterogeneous mass of distomes is included under one generic term, *Fasciola* must stand as the name of the genus. If the genus is divided (and this certainly must be done sooner or later), the genus with *F. hepatica* as type-species must receive the name *Fasciola*. Personally, I believe that flukes of the type of *F. hepatica* should be separated from the remaining distomes. The forms which authors have brought into close relationship with *F. hepatica* are: *F. gigantea*, *F. Jacksoni*, *F. magna*, *D. delphini* Poir., *D. palliatum* Looss, *D. Rochebruni* Poir., and *D. oblongum* Cobbold.

The forms *F. hepatica*, *F. gigantea*, *F. magna*, and *F. Jacksoni* agree in the following particulars:

[1] I Distomi dei Mammiferi; Estratto dal Programma della civica Scuola Reale superiore. Trieste, 1892.

1. The worms are hermaphrodites; body broad and flat.
2. The intestinal cæca are profusely branched.
3. The testicles are profusely branched and are situated on nearly the same height, for the greater part posterior to the transverse vitello-duct.
4. The ovary is branched and situated anterior to the transverse vitello-duct.
5. The vitellogene glands are enormously developed and occupy the margins of the entire worm, posterior to the acetabulum.
6. The uterus forms a rosette posterior to the acetabulum.
7. The genital pore is about half-way between the sucker and the acetabulum.
8. A cirrus is present.

Hab. Liver of various herbivorous animals.

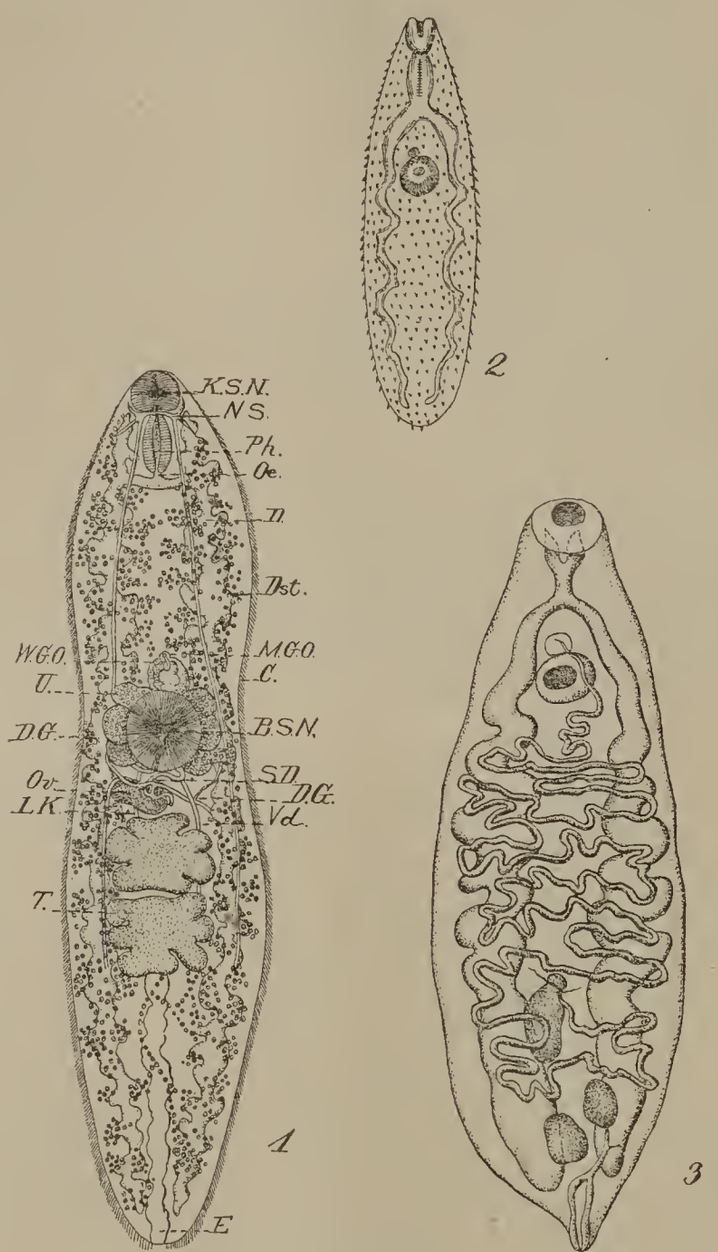


PLATE VII.

FIG. 1.—*Distomum palliatum* Looss. *K.S.N.*, oral sucker; *B.S.N.*, acetabulum; *N.S.*, nervous system; *Ph.*, pharynx; *Oe.*, œsophagus; *D.*, intestinal cæca; *E.*, excretory system; *C.*, cuticle with spines; *M.G.O.*, male genital opening; *W.G.O.*, female genital opening; *U.*, uterus; *S.D.*, shell-gland; *D.G.*, vitello-ducts; *Dst.* vitellogene glands; *L.K.*, Laurer's canal; *Vd.*, vas deferens; *T.*, testicles; *Ov.*, ovary. After Looss, reduced.

FIG. 2.—*D. oblongum* Cob. After Cobbold, 1864, reduced.

FIG. 3.—*D. oblongum* Cob. After Cobbold, 1879, reduced.

D. palliatum Looss, 1884 (Plate VII., Fig. 1), presents the following characters:

1. Hermaphrodite; body narrow.
2. The intestinal cæca are but very slightly branched.
3. Testicles are lobate, one lying posterior to the other, both posterior to the transverse vitello-duct.
4. Ovary is slightly lobate and lies posterior to the transverse vitello-duct.
5. Vitellogene glands are not so profusely developed as in *F. hepatica*, etc., but extend some distance anterior to the acetabulum.
6. Uterus forms a rosette dorsally of the acetabulum.
7. Genital pore is only slightly anterior to the acetabulum.
8. Cirrus present.

Hab. Liver of *Delphinus delphis.*

D. delphini Poirier, 1886 (Plate VIII., Figs. 1–3) shows the following characters:

1. Hermaphrodite; narrow body.
2. Intestinal cæca are branched about as much as *D. palliatum.*
3. Testicles are ovoid, one posterior to the other, both posterior to the transverse vitello-duct.
4. Ovary spherical, anterior to transverse vitello-duct.
5. Vitellogene glands profusely developed, and extend anterior to acetabulum.
6. Uterus does not form a rosette (Cf. Poirier's figure), and is situated for the greater part posterior to acetabulum.
7. Genital pore is only slightly anterior to the acetabulum.
8. Cirrus evidently present.

Hab. Liver of *Delphinus delphis.*

D. Rochebruni Poir., 1886 (Plate VIII., Figs. 4, 5) presents the following characters:

1. Hermaphrodite; narrow.
2. Intestinal cæca same as in *D. delphini.*
3. Testicles ovoid, one posterior to the other, both in anterior half of body posterior to transverse vitello-duct.
4. Ovary spherical, anterior to transverse vitello-duct.
5. Vitellogene glands as in *D. delphini.*
6. Uterus as in *D. delphini.*
7. Genital pore as in *D. delphini.*
8. Cirrus present.

Hab. Liver of *Delphinus delphis.*

D. oblongum (Cobbold) (*Campula oblonga* Cobbold, *Distomum campanula* Cobbold, 1876) (Plate VII., Figs. 2, 3), like most of Cobbold's species, is very poorly described. From his figures, however, we can take the following characters:

1. Hermaphrodite; narrow.
2. Intestinal cæca zigzag in form, but not dendritic.
3. Testicles round to oval, one posterior to the other, both in posterior portion of the body, posterior to transverse vitello-duct.
4. Ovary. ? (From Cobbold's figures it is impossible to tell with certainty which of two organs drawn is the ovary, one of them is nearly spherical and lies anterior to the transverse vitello-duct, the other (probably this one is the receptaculum seminis) is somewhat oval and lies posterior to the vitello-duct.)
5. Vitellogene glands?

6. Uterus long, extends anterior and posterior to ovary: does not form a rosette.
7. Genital pore immediately anterior to acetabulum.
8. Cirrus?

For this fluke, which Cobbold considered intermediate between *Fasciola* and *Distoma*, he proposed the generic term *Campula*, but he afterward rejected the genus. It seems to be a *Dicrocœlium*, second section.

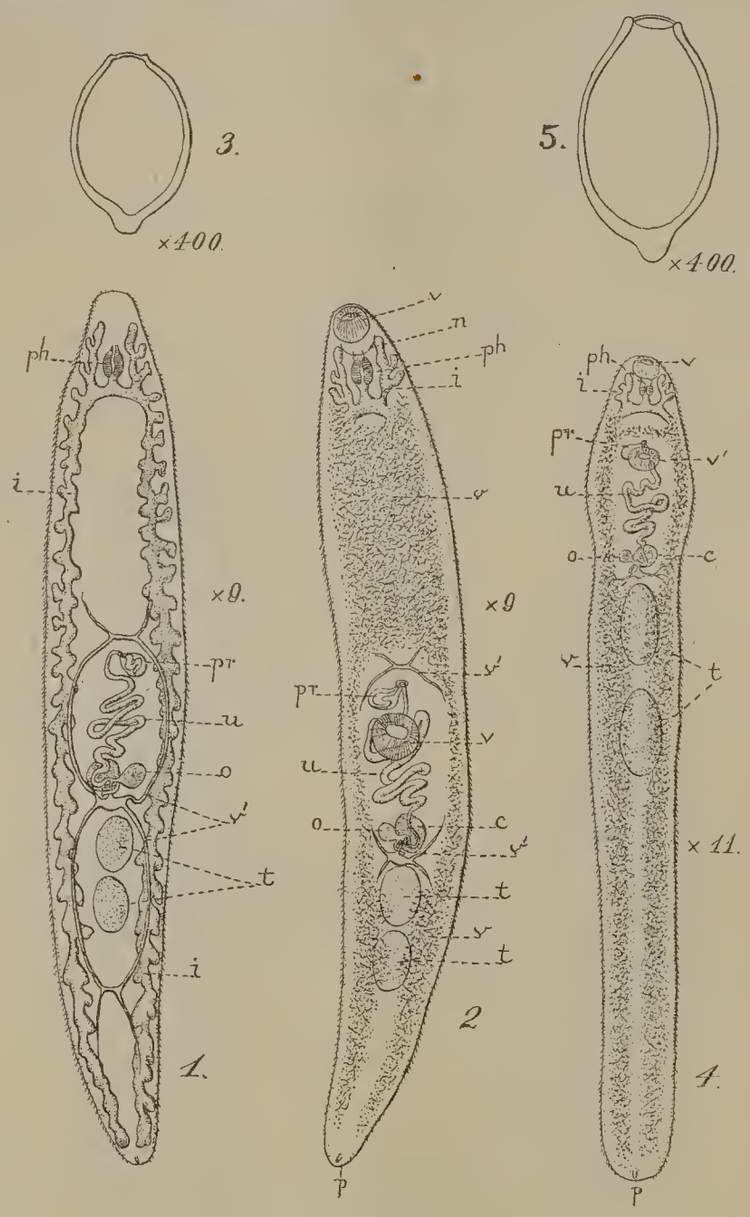


PLATE VIII.

FIG. 1.—*D. delphini* Poir. After Poirier, 1886. Dorsal view. *Ph*, pharynx; *i*, intestinal cæca; *pr*, cirrus-pouch; *u*, uterus: *o*, ovary; *v'*, vitello-ducts; t, testicles.

FIG. 2.—The same, ventral view. After Poir., 1886. *V*, oral sucker; *V'* acetabulum; *n*, nervous system; *v*, vitellogene glands; other letters the same as in Fig. 1.

FIG. 3.—Egg of *D. delphini*. After Poir., 1886.

FIG. 4.—*D. Rochebruni* Poir. After Poirier, 1886. Letters the same as in Figs. 1 and 2.

FIG. 5.—Egg of *D. Rochebruni*. After Poir., 1886.

All figures reduced to two-thirds of original drawings.

From the above analysis of characters, I think it perfectly

evident that *D. oblongum* is too insufficiently known to enter into consideration. Looking at the other forms we find that they represent two distinct groups, one containing *F. hepatica*, *F. gigantea*, *F. magna*, and *F. Jacksoni*, the other containing *D. palliatum*, *D. delphini*, and *D. Rochebruni*.

The only important character common to these two groups (aside from the hermaphroditism and presence of a cirrus) is the branching of the intestinal cæca, these being *profusely* branched in the first group, and but *slightly* branched in the second group. They differ from each other in the following characters:

	First Group.	Second Group.
Ovary	End at or very near the acetabulum.	Extend far anterior to the acetabulum.
Testicles	Profusely branched, may be side by side, or nearly so.	Ovoid to lobate; one posterior to the other.
Vitellogene glands	Branched.	Spherical to lobate.

These correlated differences seem to me ample grounds for not uniting flukes of the type of *F. hepatica* with flukes of the second group. Certainly the branching of the intestines could easily occur as a parallelism in different genera, and the very fact that the branching is so much slighter in the second group than in the first, coupled with the other divergent characters, seems to indicate that the branching in *D. palliatum* is probably of more recent origin in this group than in *F. hepatica;* if that is true, then the second group is of entirely different origin from the first, and hence not generically related. If these seven flukes, however, are placed in the genus *Fasciola*, we must not forget that the genus is practically established upon a single character, and is very artificial. The first four flukes mentioned, on the other hand, agree in more than one important character, and represent a very compact and natural group; this fact, I believe, justified Cobbold in defining the genus *Fasciola* as he did.

If, on the other hand, we are to unite other flukes in this genus, then *D. crassum* must receive our attention, for that certainly resembles *F. hepatica* as much as do *D. palliatum*, *D. delphini*, and *D. Rochebruni*.

While agreeing thoroughly with Braun that the time has not yet come to establish definite genera for all the different forms included under the collective generic term *Distomum*, I consider

that when we find a distinct group which contains several evidently very closely allied species differing very materially from the other forms—as in the case of the four species mentioned in this paper—it is best to recognize them as a distinct genus.

(*To be Continued.*)

ENCHONDROMA IN THE BITCH.[1]

BY C. A. BOUTELLE.

(*From the Pathological Laboratory of the McGill University, Montreal.*)

THE study of tumors occurring in the lower animals is one that has been sadly neglected, although it is one of very high interest. So high authorities as Friedberger and Frohner, in their special pathology of higher animals, have not a word to say upon the subject of tumors, and Dieckerhoff only mentions the malignant forms. Williams, in his *Surgery*, refers very briefly to this subject.

Although the references are so brief, it is fully recognized that the dog is frequently afflicted with new growths. Of these perhaps the commonest are in connection with the genital system of the bitch, and of the various regions of this system the mammary glands stand pre-eminent in the frequency with which they are affected. This tendency toward tumor-formation in the dog is peculiarly interesting when we consider that of all animals man is the one most liable to these new growths; also, that of all the lower animals the house-dog is the one most nearly allied to man in its environment, and I might almost say in habits of life.

I will not venture to state whether this exceptional frequency on the part of man and dog is due to the fact that they are both exposed to some common external cause, or whether it is because both in man and dog there is under present conditions a survival of the unfittest; that is to say, that in both man and dog there is a liability for weaklings and those with imperfect bodies (bodies liable to abnormal development) to be preserved alive. We would only suggest there would seem to be some relationship between the habits of existence of man and dog and the relative frequency of tumor development.

[1] Read before the Montreal Veterinary Medical Association, December 13, 1894.

Of tumors in the mammary gland in the bitch the most common are those of the nature of adenomata, or tumors which are of the structure of overgrown gland tissue.

The case I here bring forward is one of a tumor that is, though not rare, not so common, namely, of an enchondroma, or cartilage tumor of this organ. The case is of special interest, inasmuch as the history obtainable was very full, and the cause of events could easily be followed.

The subject was an aged cocker spaniel bitch, which had a litter of puppies in February, 1892. The pups all died from exposure to cold shortly after birth, causing the animal to suffer severely from retention of milk and mammitis.

The owner of the animal endeavored to remove all the milk regularly each day, but in this he was not entirely successful; for some weeks later he noticed a swelling forming in the gland near the posterior teat on the right side. This was hard and painless, and grew slowly until it attained the size of a small orange. In February, 1893, this was removed by Mr. Tracy, a graduate of ('94), with the co-operation of Mr. Hart, a student in the medical faculty of McGill University. The tumor removed at this time was 2½ inches in diameter, and its structure was typical, slightly lobulated and sharply cut off from the surrounding tissues by a dense fibrous capsule.

On section it cut with difficulty, being of cartilage-like density, while toward the centre it was of bony hardness. Sections made by Dr. Adami showed the lobules toward the periphery to be of hyaline cartilage, with some regions presenting a less dense matrix, in which were imbedded some stellate cells. The lobules were obscurely separated by layers of fibrous tissue running down into the cartilage. Further from the surface the matrix became impregnated with calcareous salts, but even at the centre the formation was not quite that of true bone; that is to say, there were large channels in which ran the blood-vessels, but the surrounding solid framework possessed neither proper Haversian canals nor true lamellæ.

This specimen was exhibited by Dr. Adami at a meeting of the Montreal Medico-Chirurgical Society on March 31, 1893 (*Montreal Medical Journal*, vol. xxii., p. 109).

The wound produced by this operation appeared to heal rapidly, and the animal enjoyed the best of health until about the middle of August last. About this time the abdomen was noticed to be enlarged, the bitch having the appearance of

pregnancy, except that the mammæ remained small. The enlargement grew rapidly until the first week in October, when the animal was brought to the hospital of the Veterinary College with the view of possible treatment.

Dr. McEachran diagnosed the presence of a tumor, but discountenanced removal on the ground that the great size rendered the survival of the animal after the operation doubtful; while, even if successfully removed, the probability was that similar growths existed in other parts of the system. He recommended that to prevent further suffering the animal be killed at an early date. The owner could not but agree to the mercifulness of this proposal, so on October 18th the bitch was taken to the pathological laboratory of McGill University, and there killed with chloroform.

Autopsy. The autopsy was performed immediately after death. On opening up the abdomen a large oval, pale-colored, hard mass was exposed, whose long diameter lay transversely or slightly obliquely across the abdomen. This was apparently enclosed in layers of the peritoneum, and was attached to the omentum and stomach by delicate layers of fibrous tissue containing bloodvessels.

The spleen was firmly attached to the left and undersurface of the mass, but on the anterior surface there could be seen a small portion of hepatic tissue completely detached from the main mass of the liver, about 2½ by 1 inch. The tumor on removal was found to weigh between ten and eleven pounds. The animal when in health had weighed under thirty pounds. On section the outer portion proved in general to be denser than the more central area. The outer portion cut like cartilage, with here and there denser calcareous masses within it. The more central portion was softer and more of a semi-gelatinous nature, and from this there poured a thick, glassy, transparent fluid slightly tinged with blood.

On further examination smaller secondary growths were discovered in the lungs, pancreas, the axillary and mesenteric glands. In the left kidney a small whitish mass was discovered about one-eighth of an inch across, thought to be a secondary growth, but on microscopical examination it was found to be mainly fatty. The heart was normal. At the site of the previous operation a small sinus was discovered, at the base of which was a little growth of glandular rather than of cartilaginous appearance. Portions of the various affected regions were re-

moved and placed in hardening solution for eventual microscopical examination.

Microscopic examination. This examination showed, as the naked-eye appearances indicated, the main tumor to be a rapidly growing enchondroma, which had in parts undergone calcareous infiltration, although over a large area the cartilaginous matrix had either been replaced by more mucoid gelatinous material, or through the rapidity of growth proper chondrin had not been developed. In one of the peripheral regions there was present also a considerable number of fat cells. These modifications or accompaniments of other forms of connective-tissue growth are frequent in rapidly growing enchondromata. We have here to deal with, in fact, a lipo-myxo-osteoid enchondroma.

In passing it may here be mentioned that the cells in certain regions were so abundant and closely packed as to give also the appearance of a sarcoma. In other regions there was a fair amount of fibrous tissue; added to this also was an occasional hemorrhage into the substance of the tumor, but these occurrences were apparently rare.

In the affected glands and in the lungs typical small cartilaginous growths were discovered having a tendency to osteoid formation. In the lungs these were numerous, varying from one-sixteenth to one-quarter of an inch in diameter.

The mass at the termination of the sinus in the mammary gland presented a totally different appearance. Here we had to deal with a growth which human pathologists would term either a malignant adenoma or carcinoma.

There was an increase in the fibrous stroma of the region, and in the spaces of the stroma were dilated and very abnormal gland follicles. In the place of a regular and well-developed layer of epithelial cells these follicles were formed of overgrown irregular cells in several layers.

They contained also an inspissated, semi-solid material of a colloid nature, and, what is more, there was to be observed in several of them a papillary ingrowth. Such a condition in the human breast is described as "carcinoma phyllodes, though some authorities like Orth are a little inclined to look upon this as not quite carcinoma, because of the associated cystic dilatation of the follicles. Nevertheless, in this case, there is such definite irregularity in the growth of the epithelium that we cannot look upon this as being carcinomatous.

In the dog it is to be noticed that this condition would not

seem to be so highly malignant as it is in man, for in the dog there is not such a liability for secondary growths to develop in other parts of the body following upon mammary tumors of this nature.

There are several features in this case which render it deserving of being placed on record.

First and foremost, we have the development of a cartilaginous tumor in a region which normally contains no trace of this tissue.

The mammary gland is, however, the occasional seat of enchondromata. In man enchondroma of the mammary gland is peculiarly rare. In the bitch it does not seem to be so rare; in fact, this is the second example that has come into the pathological collection at McGill within a year.[1]

Why enchondromata should develop in this region it is most difficult to explain according to any of the present theories of tumor-growth.

Possibly there is some relationship between this and other so-called heteroplastic growths in the mammary gland and their frequent occurrence in the other glandular portions of the genital system; that is to say, it would almost seem as though within the genital apparatus there is a capability or a potentiality for the development of any or every kind of connective-tissue formation. It may be noticed that the testis is another not infrequent seat for the development of enchondromata.

Secondly, this case is remarkable in that here we have such a rich development of metastatic or secondary new growths. This is, to say the least, unusual in the case of enchondromata. These tumors are usually benign, and grow at the seat of origin only. As with other connective-tissue tumors, so with enchondromata, the lung is the most frequent seat of the metastatic tumors, and in this case it is noticeable that the lung was thickly scattered over with small growths of cartilage.

Virchow, in his classical work upon *Tumors*, figures a lung the seat of secondary cartilaginous growths closely resembling the lung in this case. His specimen was also from the bitch.[2]

The reason for this predilection is easily explained. It is

[1] Since writing this article I have observed a third case.

[2] Recently in the case examined by me, since this article was read before the Montreal Veterinary Medical Association, I have come across another example of these pulmonary metastatic growths of cartilage. It would seem probable, therefore, that in the dog there is far greater liability for these metastatic growths to occur than there is in man.

through the bloodvessels that cells are carried away from the primary growth. They are borne by the veins to the right side of the heart and are arrested in the lung capillaries.

Thirdly, some not so arrested may pass through to the left side of the heart, and may be carried to various portions of the system.

It would seem in this case as though the huge secondary growth, which developed in the abdomen, had commenced in the lower portion of one of the lobes of the liver. By no other means do I see how we are to explain the presence upon the surface of the growth of a detached portion of liver tissue. It would appear that in its growth the tumor mass had so pulled upon the lobe in which it was developing, that it eventually became separated and dragged with it the lower portion of the lobe, at the same time gaining secondary vascular supply through the inflammatory adhesions developing around it.

Lastly, it is to be noticed that clearly this tumor developed after disturbed function and injury to the mammary gland.

According to the description given by the owner it was after a condition of mammitis, following upon a retention of milk, that the tumor developed. Such a relationship is far from being uncommon. It is of peculiar interest to notice the sequel in the mammary gland. Evidently the operation wound did not heal completely, but a sinus was left leading down to the mammary tissue, and here again following upon the chronic inflammation there was developed a new growth; but now, instead of this being an enchondroma, the tumor was of the nature of an aberrant gland formation—a malignant adenoma or carcinoma.

California will send a delegate to the next meeting of the United States Veterinary Medical Association. This will add another link to the chain of union that tends to encircle through the National Association the entire profession of our country. Among the list of applicants for membership there will be several well known California veterinarians.

Montana, by proclamation, forbids the importation of sheep unless inspected by State Veterinarian and found free from disease, from Oregon, Nevada, California, Washington, Idaho, Colorado, Utah, Okalahoma, and New Mexico.

ANTITOXIN.[1]

I. The Production of Diphtheria Toxin.

BY WILLIAM HALLOCK PARK, M.D.

Before describing the process of preparing the diphtheria antitoxin it will be well to state briefly our present views upon the relation of the diphtheria bacilli to diphtheria. Recent investigation has in no way weakened our belief that true diphtheria, and by that I mean a pseudo-membranous inflammation which gives us clinically the characteristic picture which we have always recognized as diphtheria, is primarily caused by the bacillus diphtheria of Lœffler. We know now, indeed, that the virulent bacillus may be taken into the mouth, and may even multiply and remain in the throat secretions for days and weeks without giving rise to diphtheria; but under conditions favorable to the development of diphtheria these bacilli are perfectly able to start up disease either in the person's throat where they have been lying dormant or in the throats of others to which they have been transferred.

The preparation of the toxin of the diphtheria bacillus for the purpose of injecting animals in order that they may produce in their bodies the diphtheria antidote—the antitoxin—has been so fully and so often described that I will but briefly touch on certain practical points. The diphtheria bacilli should be obtained from a number of severe cases of diphtheria, and should be tested as to their virulence by injecting them in guinea-pigs. From the number tested four or five of the most virulent cultures, which have been derived from different cases, should be selected to inoculate the bouillon for making the toxin. Experience has taught that bacilli from different sources having equal virulence in guinea-pigs do not always produce the same amount of toxin in bouillon. It is thus better not to inoculate all the flasks from one culture. It has also been found that different cultures vary greatly in the length of time the bacilli retain their full virulence. In making the original stock cultures it is well to inoculate the bouillon in each of the

[1] Papers read before the Veterinary Medical Association of New York County, March 5, 1895.

tubes from a number of colonies from the agar plates, the cultures thus obtained being more apt to be virulent. The flasks used for the preparation of toxin may be either of the ordinary shapes or may be flat-bottomed, with tubes for the inlet and exit of air. I have found that the bacilli grown in a thin layer of bouillon in ordinary flasks loosely stoppered with cotton have produced toxins about as strong and nearly as quickly as those grown in the bouillon to which a constant supply of moistened air has been added. Toxins, of which one-tenth of a cubic centimetre was sufficient to kill a 250-gramme guinea-pig were produced in from two to four weeks. In some cases the toxins were twice the above strength. If to an old culture ½ per cent. carbolic acid is added and the bacilli, after being killed, are allowed to remain soaking in the bouillon, the amount of toxin will be found to gradually increase. The dead bacilli give up some of the toxin contained in their bodies to the bouillon. In order to take advantage of this fact the bacilli are left with the toxin after ½ per cent. carbolic acid has been added until the toxins are desired for use. At times when the strong toxins were scanty the dead bacilli were not filtered out, but injected along with the weaker toxin. The only evil effect noticed was the liability to produce slight local abscesses in the horses.

II. The Production of Diphtheria Antitoxin.

BY H. D. GILL, V.S.

Out of seventy-five horses I have had under my charge three-fourths are either balkers, kickers, runaways, or have some habit which renders them unfit or unsafe for general use. On account of these faults I have been able to get young and healthy horses for a very low figure.

Coarse-bred horses between the ages of four and six, well muscled and nourished, and having had regular work up to the time of inoculation, are the ones selected by me as best fitted for this purpose.

Green horses, or those of a nervous temperament, seem to be physically unable to withstand even small doses of toxin, which in them causes very sudden and alarming nervous symptoms, from which they may die or very slowly recover after injections,

and therefore are rendered more susceptible to the poison. It is a waste of time and money to continue with such subjects.

The circulation, respiration and temperature must be normal, they must be free from any disease and stand the mallein test for glanders.

Lameness insufficient to cause systemic disturbance or interfere with daily exercise should not be a bar. No objection to color. (*See further on.*) Clipping and thorough grooming improve the general condition of the animal, and the skin is more easily rendered aseptic.

The food should be varied, but of the best, the amount being governed by the general condition, weight and exercise. I have noticed that in horses receiving regular diet and little or no exercise the reaction to the toxin is considerably increased, causing a loss of valuable time to allow for convalescence.

As a rule horses, particularly those with swellings, do best in box stalls, and all but those exhibiting marked nervous symptoms should be loose; the latter should be kept perfectly quiet in single stalls with no food for at least one day, and then with only half the regular allowance until their return to a perfectly normal condition. With the exception of the last mentioned they should be exercised daily, stiff ones as well, for I have found that forced exercise to these causes a more rapid absorption of the infiltration, and a general improvement follows.

For *inoculation*, two sterilized hyperdermatic syringes are used, one holding ten cubic centimetres and the other holding about sixty cubic centimetres. The first for small and the latter for large doses.

Syringes with asbestos plungers are preferable, because they can be sterilized by heat without altering or destroying their usefulness. Syringes with plungers of other material are made sterile by soaking for twenty-four hours in 5 per cent. solution of carbolic acid.

The flank, brisket and the upper and middle third of the thorax posterior to scapula are the points generally selected for inoculation.

Injections are not made in the neck, because the subsequent issue-change interferes more or less with the isolation of the jugular vein when we come to bleed; nor in the extremities, as the subsequent swelling causes painful and limited movement of the limb.

Within a radius of at least six inches from the point of inocula-

tion the hair should be either closely clipped or shaved, the part washed with soap and water, followed by either a 5 per cent. solution of carbolic acid, or a solution of $\frac{1}{800}$ bichloride of mercury.

The proper amount of toxin solution is drawn into the syringe, all air being expelled; the needle is dipped into the carbolic solution and then very quickly forced obliquely through and under the skin for at least two inches. This prevents the escape of the toxin through the puncture made, particularly when any considerable amount is injected. Great care must be exercised not to inject air with the toxin.

Toxin solutions, unless filtered, should stand for some time before being used, so as to allow the dead diphtheria bacilli to precipitate, and no more than fifty cubic centimetres should be injected at one point.

The best results have been obtained by commencing with very small doses (one-half cubic centimetre) of weak toxin, repeating with an increased amount not sooner than forty-eight hours, and only then if the temperature is normal and the animal apparently healthy. This is very necessary, as we very often have a secondary reaction.

In a number of animals having tissue enlargements the part affected was aggravated after injection, and terminated either in absorption to a greater or less degree or in suppuration.

At the point of injection, in nearly all cases, a very hard and intensely sensitive swelling is produced, varying in size; when not absorbed it terminates in either abscess, new connective tissue or slough, these conditions being treated in the usual way.

In a number of horses, principally gray, there is developed urticaria; in others the skin becomes hot and tense. When a horse is able to take one hundred to two hundred cubic centimetres of a virulent toxin solution without producing any marked abnormal symptoms it has acquired considerable immunity. A small amount of blood, about one-half litre, is then drawn and tested to determine the amount of antitoxin it contains.

If up to the standard about six litres of blood are drawn from a horse of average size, the injection of toxin is continued for three or four weeks, and then, if conditions are favorable, the bleeding process is repeated, and the strength determined as before. For one week prior to bleeding the horse must be free from all toxic symptoms, during which time it receives no more injections. The horses so bled appear to suffer no inconvenience

from the same, but on the contrary are more lively and have an increased appetite. The amount of toxin an animal receives is no indication of the strength of the antitoxin obtained.

Therefore it is necessary that the serum from each and every drawing should be tested.

The horse's susceptibility is determined by symptoms, particularly the temperature, which is taken at 8 A.M. and 7 P.M., daily.

The following is our method for the extraction of blood from a horse: The horse is prepared by shaving and washing as before, and all instruments sterilized by boiling in a 1 per cent. carbonate of soda solution. An incision of about one inch in length is made through the skin with a scalpel over and parallel to the jugular vein. The trocar used is a piece of steel tubing three-eighths of an inch in diameter, and about four inches long; it has thin walls and a sharp beveled point at one end; the sharp point is plunged into the jugular vein, which is distended by an assistant compressing the same below.

To the blunt end of the canula is attached a piece of rubber tubing eighteen inches long, the distal end fitting over a glass tube about four inches in length. Before entering the vein the glass end is put into a flask previously sterilized. The blood flows until the desired amount is obtained. The current is stopped by compressing the rubber tube, and the glass tube is withdrawn. If more blood is to be drawn, this process is repeated. The canula is withdrawn and the wound sterilized, sutured and covered with iodoform and salicylic acid, when healing generally takes place by first intention.

The first drawing is tested, and if found of sufficient strength five or six litres may be extracted. The serum of this blood is used as an immunizing and curative agent.

The flasks used for this purpose are ordinary "Erlenmeyer" and hold from one-half to one litre; when filled they are placed in a refrigerator, where they remain for at least forty-eight hours. By this time the greater amount of the serum has separated from the clot, and is drawn off through a sterilized pipette into bottles holding about twenty-five cubic centimetres. A small piece of camphor is added, the bottles labeled and placed in stock ready for use.

The State Veterinary Sanitary Board of Pennsylvania commences its work on June 1, 1895.

III. Therapeutic Use of Antitoxin.

BY J. H. HUDDLESTON, M.D.

When the blood is drawn it passes into sterilized flasks, and is then kept in the refrigerator in the laboratory three or four days, to give time for the clot to squeeze out the serum.

Testing the serum. The serum obtained, the next thing is to test its strength, *i. e.*, to find out how much antitoxin it contains. In doing this the method originated by Behring is followed. The toxin bouillon is again taken, and the amount of it necessary to kill a guinea-pig weighing two hundred and fifty grammes is carefully ascertained by experiment. Ten times this amount of the toxin bouillon is then mixed with a certain amount of the serum to be tested, and the mixture is injected into a guinea-pig. If the pig dies there is evidently not enough of the serum in the mixture; more is added and the injection repeated. Thus, by a series of experiments it is possible to find out just how much serum must be mixed with ten times the fatal dose of the toxin to keep the pig from dying. Serum of which one-tenth of a cubic centimetre is sufficient to save the guinea-pig is called by Behring the normal antitoxin serum, and one cubic centimetre of this serum is called one antitoxin unit. The samples now taken from the different horses under treatment vary from 300 to 2000 units, *i. e.*, $\frac{1}{2000}$ of a cubic centimetre of the strongest serum would save a guinea-pig weighing 250 grammes if injected with ten times the fatal dose.

Bottling. The tested serum is put up in sterilized bottles provided with rubber sterilized stoppers. Special bottles are now being designed, which are to be of two convenient sizes (10 c.c. and 20 c.c.) and to serve as measures of the serum. Various antiseptics have been tried—carbolic acid, chloroform, trikresol, thymol, and camphor, and at present the custom is to put a small piece of sterilized camphor in every bottle Thus prepared, a bottle will (if kept in a dark cool place) maintain its strength probably for six months. If not kept with sufficient care it may become turbid, and in that case its use is not to be recommended. It has been found, however, that thymol used as an antiseptic causes in the serum a chemical change which is evident as turbidity.

Syringe. To make the injection there have been proposed

various syringes, none of which can claim absolute superiority over all the rest. One essential in a syringe is that it be so constructed that it can be readily disinfected. A glass barrel and a piston with asbestos packing best serve this end. The barrel should be large enough to hold the entire dose, and the needle should be long enough to deposit the fluid well under the skin. The serum is viscid, and the calibre of the needle must, therefore, be rather large.

Dose. The dose varies, of course, with the strength of the antitoxin. A month ago, with the comparatively weak antitoxin then produced, 25 to 30 cubic centimetres were injected. At present 10 to 12 c.c. suffice for a child four or five years old, and proportionately less for a baby. For immunization 3 or 4 c.c. are usually thought sufficient.

Number of injections. In the majority of cases one injection is all that is given. Not very frequently, however, a second injection is given twelve to eighteen hours after the first, and three, four, and even seven injections have been given at similar intervals.

Precautions at injection. The skin is carefully cleansed with water, and soap if necessary, 5 per cent. carbolic acid solution, and alcohol. A fold of the skin is then pinched up with clean fingers, and the needle pushed in parallel with the subjacent muscle an inch or more, and then the serum is slowly injected. The thighs, buttocks, and lumbar muscles are the favorite sites for injection. Some pain, of course, attends the prick, and some, too, though surprisingly little, the distention of the parts by the serum.

Results of injection. These vary very markedly with the duration of the disease before injection. If the injection is given on the first day there is usually a prompt fall of temperature and pulse and an improved general condition. The same is true, to a less marked degree, on the second, third, and, perhaps, the fourth day; but after the fourth the antitoxin seems very frequently to have but little effect on the constitutional symptoms. On the local condition, on the contrary, the antitoxin seems to have very constantly the effect of diminishing the engorgement and the discharge and of loosening the membrane, provided only that the child lives more than a few hours after the injection. In "croup" cases, *i. e.*, in all cases in which the larynx is involved, there is just as much need of intubation as ever, but with the tube inserted there is a marked decrease in

the mortality, and even in the fatal cases there is a very notable prolongation of life over what is customary.

The mortality in "croup" cases at the Willard Parker Hospital was never, in pre-antitoxin times, much below 50 per cent., but in the last eighteen croup cases treated by antitoxin there were only four deaths. The mortality in severe non-laryngeal cases here in New York varies, but is probably not much less than 30 to 40 per cent. in children under five years. With the antitoxin treatment the mortality, as far as we now know, is only about 15 per cent. The results of the immunization treatment are not yet known, but there are two cases on record which received, one a large immunization injection (18 c.c.) and the other a small one (4 c.c.), and both became ill with diphtheria a month after injection. It may be inferred, therefore, that the immunization conferred does not last more than a month. Among the minor effects of antitoxin it may be mentioned that the albuminuria present before injection has been found in some cases to diminish very markedly after injection. In a certain proportion of cases a general erythema, often accompanied by urticaria, appears in from ten to fourteen days after the injection, and lasts from a few days to two weeks, finally disappearing without scaling. Rarely a well-marked purpura has been seen; neuralgia in the limbs, hyperæsthesia of the skin, and great weakness have all been mentioned as occasionally coming on after the injection, and lasting usually only a very short time. It is proper to remark that well-marked nephritis has appeared, and that in a number of cases late death has occurred from heart failure, just as happens in diphtheria not treated by antitoxin.

Finally, a rough summary of the results of the antitoxin treatment here in New York would be: Out of every hundred severe cases of diphtheria in children under five years twenty more are saved by the antitoxin treatment than are saved by any other. Old complications are not made worse or more frequent, and no new complications, except eruptions on the skin, are introduced.

The prospect of lifting the embargo against American cattle and live stock products by Germany grows brighter, as the opinions of the foreign veterinarians are being more thoroughly diffused.

COMMENCEMENT EXERCISES.

ONTARIO VETERINARY COLLEGE.

THE twenty-sixth annual commencement of the Ontario Veterinary College was held in Assembly Hall, Toronto, on March 29. The number of graduates reached 150. The exercises were presided over by Prof. Andrew Smith, principal of the college. Among those present were the Lieutenant-Governor, Rev. Principal Caven, Dr. Cowan, of Galt; Mr. Robert Jaffray, Dr. Wilson, of London; Mr. Sisson, of the Ontario Agricultural and Arts Association; Dr. Daniel Clark, Mr. William Christie, Dr. Duncan, Commander Law, Mr. J. J. Winthrow, Mr. Henry Wade, Rev. Charles Campbell, Dr. May, Mr. H. J. Hill, Dr. Thorburn, Dr. Elliot, of St. Catharine's; Mr. C. H. Sweetapple, Mr. Septimus Sisson, C. G. Richardson, and Col. D'Arcy Boulton, of Cobourg.

Dr. Smith, referring to the college history from 1866, said there had been a gradual increase in the number of students until a period two years ago, since when there had been a falling off, though a greater extent of country was represented.

Dr. Duncan read the following list of graduates, honor and prize men:

Leslie J. Allen, Blue Mound, Kansas; James H. Armstrong, London, Ont.; C. E. Arnold, Brant, Ohio; Jas. E. Alyed, Consecon, Ont.; Oscar J. Amey, Ernestown Station, Ont.

Forrest P. Barrett, Peterborough, N. H.; James A. Bean, Wellington, Ont.; Llewellyn W. R. Best, Sandford, Ont.; S. P. Bishop, Greencastle, Pa.; Albert M. Blackwell, Omaha, Neb.; J. F. Blinzley, Norwalk, Ohio; David R. Bone, Paisley, Ont.; Edward T. Bowers, Cedar Rapids, Neb.; Henry Boyd, London, Ont.; O. E. Brandreth, Strathroy, Ont.; Charles E. Broad, Nomence, Ill.; Thomas Broom, Blenheim, Ont.; George J. Brossard, Fall River, Wis.; D. Clifton Burnett, Youngstown, Ohio; Edward D. Burns, Farmington, N. Y.; James H. Burt, Lostwithiel, Cornwall, England; Herman Busman, Cooperville, Mich.; Edward F. Bettinger, Chittenango, N. Y.; Ernest C. Burdick, Livonia, N. Y.

Harvey H. Carter, Brookfield, Ohio; John M. Coates, Kearney, Mo.; Frederick W. Cook, Jamesville, N. Y.; Dillon Coristine, Watford, Ont.; Aaron Cornell, Elkton, Mich.; Frank B. Cotton, Grand Rapids, Mich.; H. S. Creighton, Americus, Kansas; Bradford D. Curtis, North Attleborough, Mass.; Dwight S. Church, Scranton, Pa.

Willard De Bolt, Union City, Ind.; Roy E. Davis, Toledo, Ohio; James Dent, Milton, Ont.; J. M. Dodge, Caro, Mich.; Joseph A. Douglas, Blake, Ont.; William F. Duffield, Pittsfield, Ill.; W. J. Davis, Decatur, Ill.

Louis H. Eckert, Sebringville, Ont.

John W. Farr, Jarvis, Ont.; W. H. Farrow, Auburn, Ont.; George H. Fitch, Claremont, N. H.; George D. Fortune, Wingham, Ont.; William Fotheringham, Grenfell, N. W. T.; Arthur P. Freeman, Barrie, Ont.

James G. Galloway, Uxbridge, Ont.; Augustine J. Gibbons, Wingham,

Ont.; John G. Gibson, Alameda, N. W. T.; S. Wells Gibson, Cleveland, Ohio; H. M. Gillian, Ackley, Iowa; Francis W. Gokey, Guelph, Ont.; Albert E. Goodwin, Hager City, Wis.; Robt. L. Graham, Schomberg, Ont.; James Grant, Teeswater, Ont.; Lawrence A. Grinnell, Grand Ledge, Mich.

Joseph A. Hackett, Hockley, Ont.; Henry H. Hackler, Pottstown, Pa.; Joseph Hamilton, Auburn, Ont.; William S. Hamilton, Chelsea, Mich.; Edward T. Handy, Onondaga, Mich.; William H. Haney, Forest, Ont.; Bernard Harmon, Decorah, Iowa; George A. Hay, Campbellford, Ont.; Edwin M. Henry, Oswego, Kansas; Alfred S. Henhoffer, Strasburg, Ont.; Robert J. Henry, Mono Mills, Ont.; Robert C. Hill, Twin, Ohio; W. Proctor Hill, Frederick, Maryland; John B. Hollenbeck, Rock Valley, Iowa; Maurice A. Hollingsworth, La Salle, Ill.; David Hood, Alliston, Ont.; Roy White Hooker, Lowell, Mich.; Benj. F. Hoover, Davis, Ill.; William R. Hynes, New York City; Hiram E. Hensel, Arcadia, Wis.

Charles E. Inskeep, Port Jefferson, Ohio; George Ireland, Inglewood, Ont.

Albert W. James, Toronto, Ont.; John V. Jewell, Marcus, Iowa; John W. Johnson, Bath, Ont.

J. M. Klinck, Toronto.

William H. Lake, Miami, Man.; Alexander O. Lee, Toronto; John Letham, Stonehouse, Scotland; Don. J. Loofbourrow, Mt. Sterling, Ohio; Robert C. Lipsett, Glenboro, Man.; George A. Lipsett, Glenboro, Man.

Fred. S. McA. Macdonald, Dundas, P. E. I.; Robert Webber McKibbin, Buck Valley, Pa.; Frank J. McNeal, Shickshinny, Pa.; Harry T. McNeal, Shickshinny, Pa.; W. Albert McNeely, Green River, Ont.; Colin McPherson, Glanworth, Ont.; John McKay, Duluth, Minn.; Donald McKercher, Petrolea, Ont.

Fred. De Witt Markham, Port Leyden, N. Y.; Claude L. Megowan, Sacramento, Cal.; Peter J. Mertz, Virginville, Pa.; Richard A. Milne, Don, Ont.; J. J. Moore, Corning, Iowa; George F. Myers, Danville, Ill.; Henry H. Myers, Youngstown, Ohio; Alfred A. Moody, Guelph, Ont.; William M. Morris, Cass City, Mich.

William Nicholson, Pittsburg, Pa.; Robert R. Nickell, Limehouse, Ont.

W. H. Oatway, Chicago, Ill.

Daniel George Peat, Plainville, Ont.; Albert M. Perdue, Wingham, Ont.; Richard M. Phelan, Greenville, Pa.; Walter R. Pick, Columbus, Wis.; Wm. T. Pugh, Grafton, N. Dakota.

Edward Rafter, Hamburg, N. Y.; G. G. Ratz, Red Bud, Ill.; Charles M. Roche, Cork, Ireland; Peter J. Roets, Monches, Wis.; Henry C. Riddle, Waterloo, Ont.

J. R. Saxton, Strathroy, Ont.; M. J. Sexton, Minneapolis, Minn.; Arthur L. Shaw, Mt. Upton, N. Y.; Franklin Gifford Shepard, North Evans, N. Y.; William Morris Stanley, Guelph, Ont.; Henry D. Stebbins, Westmoreland, N. Y.; W. Oscar H. Stener, New Haven, Conn.; Archibald D. Stewart, Ailsa Craig, Ont.; James Stewart, Ailsa Craig, Ont.; Thomas M. Sweeny, Richmond, Va.; M. B. Stiver, Mount Albert, Ont.

James A. Tancock, London, Ont.; James W. Thompson, Cameron, Mo.; J. Thomson, Clinton, Iowa; Geo. P. Tucker, Lincoln, Neb.; Horace Bruce Taylor, Nicholasville, Ky.; Cæsar Augustus Turley, Brandon, Man.

Ernest George Vans Agnew, Fulda, Minn.; Frank Vans Agnew, Rochester, Minn.; Robert Vans Agnew, Fulda, Minn.; Edward F. Vorhis, Ithaca, New York.

Thomas G. Waghorn, Kirkton, Ont.; Duran M. Walco, Grand Ledge, Mich.; Edward K. Ward, Guilford, Ind.; John Welch, Strathroy, Ont.; William W. Welch, Elgin, Ill.; William Lincoln West, Ellsworth, Maine; Allan S. White, Glenallan, Ont.; Joseph Wingerter, Akron, Ohio; Hervey W. Witmer, Greencastle, Pa.; Clarence D. Wooding, Waterbury, Conn.; Alexander H. Wright, Columbus, Wis.; Frank W. Waterman, Providence, R. I.; Macy Weesner, Fort Wayne, Ind.; Fred. A. Wilson, Toronto, Ont.

Amos W. Young, North Liberty, O.; David F. Young, Alameda, N. W. T.

Seniors by Departments.

Pathology (seniors)—W. L. West, silver medal; W. Fotheringham, second prize; F. Vans Agnew, third prize. Honors—L. J. Allan, C. E. Arnold, F. V. Barratt, S. P. Bishop, E. F. Bettinger, E. T. Bowers, H. Boyd, O. E. Brandreth, G. J. Brossard, D. C. Burnett, E. D. Burns, J. H. Burt, E. C. Burdick, H. Busman, J. M. Coates, D. Coristine, H. S. Creighton, B. D. Curtis, W. De Bolt, W. J. Davis, Roy E. Davis, G. D. Fortune, W. Fotheringham, G. Galloway, A. C. Goodwin, R. L. Graham, L. A. Grinnell, H. D. Hackler, W. S. Hamilton, E. T. Handy, E. M. Hendy, A. S. Henhoeffer, R. C. Hill, H. E. Hensell, J. B. Hollenbeck, M. A. Hollingsworth, A. O. Lee, J. Letham, D. J. Loofbourrow, R. W. McKibben, H. T. McNeal, D. McKercher, F. De W. Markham, C. L. Megowan, G. Myers, R. R. Nickell, W. H. Oatway, R. M. Phelan, E. Rafter, H. C. Riddle, F. G. Shephard, H. D. Stebbins, A. D. Stewart, T. M. Sweeny, J. A. Tancock, H. B. Taylor, J. Thomson, G. P. Tucker, F. Vans Agnew, R. Vans Agnew, E. K. Ward, W. W. Welch, W. L. West, H. W. Witmer, C. D. Wooding, A. H. Wright, A. W. Young.

Materia Medica (seniors)—First prize, T. M. Sweeny; second prize, William Fotheringham; third prize, W. R. McKibbon. Honors—J. H. Burt, J. M. Farquhar, A. S. Henhoeffer, F. D. Markham, H. C. Riddle, F. Vans Agnew, W. L. West.

Chemistry (seniors)—First prize, William Fotheringham; second prize, T. M. Sweeny; third prize, E. Rafter. Honors—H. E. Hensel, W. R. Hynes, A. A. Moody, W. H. Oatway, G. G. Ratz, W. L. West.

Morbid Anatomy (seniors)—First prize, G. D. Fortune; second prize, W. L. West; third prize, W. Fotheringham. Honors—S. P. Bishop, Herman Busman, F. D. Markham, T. M. Sweeny, F. Vans Agnew.

Anatomy (seniors)—Silver medal, W. L. West; second prize, G. D. Fortune; third prize, W. Fotheringham and T. M. Sweeny, equal. Honors—L. J. Allen, J. H. Armstrong, C. E. Arnold, J. Brown, J. A. Bean, G. J. Brossard, H. Busman, D. C. Burnett, L. A. Best, O. E. Brandreth, E. F. Bettinger, J. Burt, J. M. Coates, B. D. Curtis, H. S. Creighton, D. Coristine, A. Cornell, J. A. Douglas, W. De Bolt, T. B. Cotton, W. F. Duffield, J. M. Farquhar, A. E. Goodwin, L. A. Grinnell, F. W. Gokey, J. G. Galloway, J. M. Gibson, R. L. Graham, E. M. Hendy, E. T. Handy, W. P. Hill, D. Hood, W. R. Hynes, W. Haney, W. S. Hamilton, A. Henhoeffer, R. C. Hill, J. Latham, P. J. Meetz, H. H. Myers, G. F. Myers, R. A. Milne, F. D. Markham, D. McKercher, W. McKibben, F. S. Macdonald, W. H. Oatway, W. Pugh, W. R. Pick, D. G. Peat, A. M. Perdue, G. G. Ratz, H. C. Riddle, N. M. Stanley, H. D. Stebbins, F. Sheppard, A. F. Shaw, H. B. Taylor, J. A. Tancock, J. W. Thompson, John Thomson, F. Vans Agnew, R. Vans Agnew, W. W. Welch, John Welch, H. W. Witmer, A. H. Wright.

Dissected Specimens (seniors)—A. A. Moody, gold medal, given by Toronto Industrial Exhibition Association; F. Vans Agnew, second prize, $30; E. Rafter, third prize, $20.

Entozoa (seniors)—A. E. Goodwin, first prize. Honors—L. J. Allan, S. T. Bishop, I. Burt, J. A. Douglas, W. Fotheringham, J. G. Galloway, R. T. Graham, E. J. Handy, H. E. Hensel, W. R. Hyams, A. Henhoeffer, R. Milne, P. J. Mertz, A. A. Moody, F. S. Markham, T. M. Sweeny, John Thomson, R. Vans Agnew, W. L. West.

Physiology (seniors)—First prize, silver medal, Frank Vans Agnew; second prize, T. M. Sweeny; third prize, William Fotheringham. Honors—L. J. Allen, S. P. Bishop, J. H. Burt, J. A. Douglas, G. D. Fortune, A. E. Goodwin, A. S. Henhoeffer, W. R. Hynes, H. C. Riddle, H. B. Taylor, J. Thomson, E. G. Vans Agnew, W. L. West.

Best general examination—T. M. Sweeny, gold medal. Honors—S. P. Bishop, H. Busman, F. D. Markham, H. D. Stebbins, F. Vans Agnew, W. L. West.

Juniors by Departments.

Pathology (juniors)—First prize, H. R. Ryder; second prize, E. W. Culley; third prize, H. Taylor, R. J. Stanclift, equal. Honors—W. Agnew, H. Agnew, F. Armstrong, J. F. J. Black, A. Brechter, A. C. Campbell, P. Cain, J. L., Clark, A. E. Dennis, R. A. Dennis, J. R. Donahue, C. H. Drake, A. F. Elliott, T. H. Ferguson, J. B. Finch, W. J. Grady, C. Haas, W. W. Hall, W. E. Howe, W. N. J. Hurt, L. Heyes, C. Inglis, R. E. Jackson, P. Johnson, J. E. Johnston, N. Kippen, R. Kjerner, J. Lawrason, W. S. Longacre, J. D. Macdonald, L. Mulligan, R. W. Macdonald, A. J. McKay, H. E. Marshall, G. R. C. Merriam, W. D. Monk, P. Palmer, J. D. Paxton, O. Reed, L. T. Richards, J. L. Riddell, P. Robinson, L. D. Ryan, T. W. Simpson, F. C. Simpson, J. S. Sparrow, C. E. Steele, D. A. Stewart, J. A. Stevenson, G. A. Wehr, M. A. Whimster, A. E. Williamson, D. B. Wilson, F. L. Wingate, C. Woods, A. R. Walsh, R. E. Willis, A. G. Young.

Anatomy (juniors)—Henry Taylor, silver medal; E. W. Culley, second prize; George Ingles and G. R. C. Merriam, equal for third prize. Honors—W. Agnew, C. H. Drake, A. F. Elliott, T. H. Ferguson, W. E. Howe, J. E. Johnston, W. Longacre, J. D. Paxton, F. S. Schneiderf, C. Steel, D. A. Stewart, Carlos Woods, J. F. J. Black, J. R. Donahue, J. B. Finch, L. Hay, W. W. Hall, R. E. Jackson, Peter Johnson, R. Kjerner, S. Mulligan, A. J. McKay, L. Richards, H. R. Ryder, J. Simpson, R. J. Stanclift, M. A. Whimster, A. C. Young.

Physiology (juniors)—First prize, silver medal, Geo. Ingles; second prize, G. R. C. Merriam; third prize, J. R. Donahue. Honors—J. F. J. Black, E. W. Culley, W. T. Howe, Newton Kippen, H. R. Ryder, T. V. Simpson, H. Taylor.

Chemistry (juniors)—First prize, Henry Taylor; second prize, J. F. J. Black; third prize, Leopold Hay and R. J. Stanclift, equal. Honors—John P. Fitsgerald, A. E. Johnson, T. Lockwood Wingate, W. D. Monk, L. T. Richards, L. D. Ryan, F. C. Simpson, Thos. V. Simpson, E. A. Williamson.

Histology and Microscopy—Juniors—First prize, R. J. Stanclift; second prize, J. F. J. Black; third prize, G. R. C. Merriam. Honors—William Agnew, John L. Clark, E. W. Culley, R. A. Dennis, J. R. Donahue, A. F. Elliott, T. H. Ferguson, John B. Finch, John P. Fitzgerald, W. J. Grady,

Charles Haas, George Inglis, Roy E. Jackson, Peter Johnson, J. E. Johnston, N. Kippen, Randolph Kjerner, John Lawrason, W. S. Longacre, R. W. McDonald, John D. Macdonald, H. E. Marshall, Walter D. Monk, Lemuel Mulligan, John D. Paxton, Llewellyn N. T. Richards, Louis D. Ryan, Francis C. Simpson, Thomas V. Smith, John J. Sparrow, C. E. Steele, Henry Taylor, M. A. Whimster, Arthur E. Williamson, F. L. Wingate, Carlos Woods, Alex. G. Young.

Primary Examinations—Anatomy—A. S. Berryman, F. J. De Land, F. Duncan, J. M. Farquhar, E. T. Gore, G. H. Metcalfe, A. A. McArthur, Angus McDonald, J H. Powers, A. M. Twohey, J. Wagner, E. C. Wisman.

Materia Medica—J. M. Farquhar, F. A. Fawcett, Allan McDonald, J. Nelson, J. H. Powers, C. E. Wilson.

The prizes and medals were awarded the successful students by the Lieutenant Governor, after which the graduates were addressed by Principal Cavin, Dr. Clark, Mr. Winthrow, and Dr. May.

Principal Cavin in his address spoke very cordially of the international relations that existed between the United States and Canada.

Dr. Clark, in his remarks referring to kindness to the lower animals, thought that the man who was not kind had some twist in his moral nature, and "if animals could talk as men talk even Balaam's ass would pale his ineffectual fires."

Mr. Stebbins, of Westmoreland, N. Y., on behalf of the students, presented Dr. Smith with a fine group picture of the graduating class of 1895.

KANSAS CITY VETERINARY COLLEGE.

The Kansas City Veterinary College held its fourth Annual Commencement exercises at the Jackson County Medical Hall, Masonic Building, Thursday evening, March 21, 1895.

The following gentlemen received their diplomas:

Wm. L. Elliott, Spring Hill, Kansas; Albert B. Wilmoth, Turney, Missouri; Scott W. Peck, Las Animas, Colorado; George M. Needham, Rockford, Illinois; John E. Topping, Paola, Kansas; Harry V. Goode, Lexington, Missouri; Clarence A. Atwood, Pecatonica, Illinois; John W. Stalker, Adrian, Kansas; William T. King, Clinton, Missouri; Henry R. Thompson, Aurora, Kansas; William A. Mark, Elgin, Illinois; Silas L. Brooking, M.D., Eureka, Kansas; James H. Cock, Clinton, Missouri; John O. Young, Rice, Kansas; Benjamin F. Kaup, Nevada, Missouri.

The exercises were interspersed with instrumental music by Des Gosses' Orchestra.

After prayer by Rev. W. A. Quayle, the annual address was delivered by Hon. Webster Davis, Mayor.

The salutatory was delivered by John E. Topping, of the graduating class. The valedictory by Wm. L. Elliott.

The ceremonies were directed by Sisco Stewart, M.D., D.V.M., of the college faculty.

AMERICAN VETERINARY COLLEGE.

The twentieth Annual Commencement exercises of the American Veterinary College, were held at Chickering Hall, Monday evening, March 25, 1895. The programme was opened by the rendition of several selections by the 7th Regiment orchestra. Prayer was offered by Rev. Dr. Daniel G. Wylie. The list of successful graduates was read by Professor W. J. Coates, after which the degree of D.V.S. was conferred by Dr. Fanueil D. Weisse, President of the Board of Trustees, upon the following gentlemen: Augustus Hall Blake, Richmond Hill, N. Y.; Homer Harris Butler, New York, N. Y.; Harry Baker Cox, Merchantville, N. J.; Joseph Francis Devine, New York, N. Y.; Martin Joseph Dair, New York, N. Y.; George B. Gillmor, Pittsburg, Pa.; Robert Johnston Halliday, Jersey City, N. J.; Frank Reed Hanson, New York, N. Y.; Edwin Allen Hogan, Bayonne, N. J.; Moses Isaac, New Haven, Connecticut; Nicholas John Kaiser, Newark, New Jersey, James Michael Laffan, Irvington, N.Y.; William Henry Lawes, Jr., Shrewsbury, N. J.; Aquila Mitchell, Skaneateles, N. Y.; John Joseph Monyhan, Holyoke, Mass.; Francis Theobald O'Sullivan, New York, N. Y.; Bryer Hamilton Pendry, Brooklyn, N. Y.; Clarence R. Shults, Ogdensburg, N. Y.; Aaron Silkman, Goldensbridge, N. Y.; Wright J. Smith, Kingston, N. Y.; and John Newkirk Wrong, Sedalia, Missouri.

Professor L. H. Friedburg awarded the following prizes: The gold medal for the best examination to Aquila Mitchell. The alumni prize, consisting of a set of books, to Frank Reed Hanson, who also received the prize for the best practical examination, and also won the senior anatomy prize. The College Association prize for the best paper read and defended before that organization, consisting of a set of instruments, was won by M. J. Dair. The free scholarship prize for the second-year class, requiring a general average above 75 per cent. was won by Samuel S. Buckley. The half-scholarship prize for the best

examination by a first year student was won by Jas. B. Laffan, who also won the junior anatomy prize.

The valedictory address was delivered by Bryer Hamilton Pendry. The address to the graduates was by Dr. Wm. J. O'Sullivan, L.L.D., M.R.C.V.S., of New York City.

The college exercises were completed by a banquet at "Clark's," West Twenty-third Street, where, at 11 P.M., about sixty members of the Alumni Association gathered around the festive board and enjoyed the generous spread provided. The following toasts were responded to: "The Board of Trustees" by Dr. F. D. Weisse; "The Ladies" by Professor C. A. Doremus; "Few Words" by Professor Jas. L. Robertson; "The Alumni Association" by Dr. H. D. Hanson; "Remarks" by Professor L. H. Friedburg; "Colleges Abroad" by Dr. Thomas Giffen; "The Advance of Veterinary Science" by R. S. Huidekoper, M.D. Other toasts were responded to by various members of the different classes. Toast Master, Professor J. E. Ryder.

The classes of '79, '80, '81, '83, '84, '86, '87, '88, '89, '90, '91 '92, '93, '94, and '95 were represented at the alumni meeting and around the table, making the occasion one of the most enjoyable that the graduates of the American Veterinary College have enjoyed for many years.

NEW YORK COLLEGE OF VETERINARY SURGEONS.

THE New York College of Veterinary Surgeons held its thirty-eighth annual commencement at the Music Hall of Madison Square Garden on Monday evening, March 18, 1895. The hall was well filled. The prayer and benediction were given by the Rev. Eli Quick, Ph.D. The music was given by the Seventh Regiment band. Professor James Law, of Cornell, gave the address (*vide* page 201 of this journal).

The following gentlemen received their diplomas: William Anderson, New York; Ernest Buckley, California; Frederick Bovers, New York; George D. Burton, New York; Leopold Danielson, Norway; Clarence O. Durfee, New York; Edward B. Doyle, New York; Albert D. Edwards, New York; William J. Fredericks, New Jersey; Vernon B. Height, New Jersey; August D. Krahmer, New York; John C. Kingsland, Pennsyl-

vania; George A. Knapp, New York; George P. Kern, New York; M. O'Malley Knott, New York; Thomas H. Lynch, Connecticut; Russel Lawton, Canada; Nelson Moffatt, New Jersey; Edward A. Manuel, Wisconsin; Patrick J. Mahoney, Massachusetts; David C. McGowan, New York; Patrick McInerney, New York; Alfred T. Norman, New York; William H. C. Neff, Pennsylvania; Albert C. Roberts, New York; Rudolph J. Schreiber, New York; John M. Simpson, New York; Frederick L. Stevens, Maine; Joseph Thackeberry, New York; William J. Taylor, New York; Willy E. R. Weyman, New York.

The class officers were: Thomas H. Lynch, *President;* George D. Burton, *Vice-President;* Rudolph J. Schreiber, *Secretary;* George F. Kern, *Treasurer.*

Executive Committee: Frederick Bovers (*Chairman*), Ernest Buckley, John Kingsland, Edward B. Doyle, William J. Fredericks, Patrick J. Mahoney, August D. Krahmer (*Secretary*).

The ushers were: J. Homer Luff, William Price, Jr., James McNeil, William C. Kelly, J. B. Rue, Charles R. Scattergood, John Tjaden, Thomas E. Smith.

The following prizes were awarded: Faculty Prize—for best general examination, a gold medal—to Willy E. B. Weyman. For best general junior examination, a silver medal—to George H. Harrison. Medal for the best examination on Materia Medica—to Edward A. Manuel. Practical examination, $25, before a committee composed of R. S. Huidekoper, M.D., Vet., Thomas Giffen, M.R.C.V.S., and James Turner, D.V.S.—to M. O'M. Knott. Messrs. Krahmer, Manuel, Mahoney, and Norman were also highly commended.

After the commencement a banquet was held at Martini's, when the following toasts were given, and gratifying addresses were made by two of the trustees, Mr. Savage and Judge Guitteau:

Programme—Frederick Bovers, *Toast Master.* "The New York College of Veterinary Surgeons," Hermann M. Biggs, M.D.; "Our Alma Mater," Harry D. Gill, V.S.; "The Professional Man," George P. Biggs, M.D.; "Class of '95," Thomas H. Lynch, V.S.; "Class of '96," Charles R. Scattergood; "Veterinary Practice," Rush Shippen Huidekoper, M.D., Vet.; "The Banquet," John H. Huddleston, M.D.; "The Press," James H. Ferster, V.S.; "New Remedies in Veterinary Practice," August C. Hassloch, V.S.; "The Future," George F. Kern, V.S.

PERSONAL.

The practical examination at the American Veterinary College was conducted by Drs. R. S. Huidekoper, Thomas Giffen and Joseph Shea.

Dr. R. Price, of St. Paul, Minn., addressed the State Convention of Master Horseshoers on the subject of "Horseshoeing from a Scientific Standpoint."

Dr. E. H. Shepard, of Cleveland, Ohio, addressed the Master Horseshoers' Association on "The Anatomy of the Foot" at a very largely attended meeting in January last.

The following well-known veterinarians appeared before the Committee on Labor and Industries in the New York State Legislature to aid the passage of the bill to regulate the practice of horseshoeing in that State: Drs. W. H. Pendry, of Brooklyn; S. K. Johnson, of New York City, and J. C. McKenzie, of Rochester, N. Y.

We are credibly informed that with the opening of the session of 1895–96 of the New York Veterinary College that another name will be added to their teaching staff through the services of Dr. E. B. Ackerman, of Brooklyn. Dr. Ackerman is a graduate of the American Veterinary College, and is connected officially with the Brooklyn Board of Health, and has already obtained an enviable position as a successful practitioner.

Prof. R. S. Huidekoper on April 1st accepted the Chairs of Surgery and Anatomy at the New York College of Veterinary Surgeons. He will also be connected with the hospital staff and clinics, and will make his headquarters at the school. This will prove an added strength to the college in every way, and will be another step toward maintaining a higher curriculum, following its recent union with the three-year colleges of North America.

The response to the toast, "Advancement of Veterinary Science," by Prof. Rush Shippen Huidekoper at the banquet of the Alumni Association of the American Veterinary College was one of the most brilliantly interesting extempora-

neous responses ever listened to. Tracing step by step its progress through ancient to modern times, naming the greater lights whose skill and renown added lustre and honor in the march of progress, not excelled, scarcely equalled by the annals of any other profession, it made one and all rejoice that they had cast their lot in the domain of comparative medicine.

The McKillip Veterinary College of Chicago will, in connection with their veterinary course, adopt one of anatomy and scientific horseshoeing for the instruction of those who are engaged in or about adopting the horseshoer's art. A similar course of instruction will also be added to the Detroit Veterinary College, and we have no doubt will prove a great benefit to the shoeing art in Michigan. We have also been informed that it is likely that the New York College of Veterinary Surgeons will establish a school of farriery in connection with their college, and that it will be equipped on a very thorough and complete basis.

We believe that schools established in conjunction with the veterinary colleges will be more likely to have a lasting and fixed existence than if started alone under the present conditions under which farriery exists in our country.

About 90 per cent. of all horse hides taken off are converted into leather, from which boots, shoes, gloves, and imitation buckskin are the principal products.

The annual meeting of the Veterinary Medical Association of New Jersey will be held at the State Street House, corner of State and Chancery Streets. Trenton, N. J., at 11 A.M., Thursday, April 11, 1895. A cordial invitation is extended to all members of the profession throughout New Jersey and adjoining States. W. B. E. Miller, *President;* S. Lockwood, *Secretary.*

A prominent and well-known writer in an article in the *Century Magazine* for March incorrectly uses the word veterinary when he speaks of a veterinarian or veterinary surgeon. The abbreviated term "vet," frequently used in this article, is not one that is either accepted or adopted in this country. It borders too closely on slang to longer be used at all when speaking of a now recognized and acknowledged profession.

EDITORIAL.

Important Notice.

The Journal wishes to give notice to all of its subscribers that, beginning with the March number, the publishers will refuse to replace any numbers lost in transmission through the mails, unless a claim is filed for the same within thirty days from the date of mailing from the publication office. Beginning with the April number the Journal will be regularly sent out between the 5th and 10th of each month. We do this because it is next to impossible to trace up Journals lost for two or three months and to place the proper responsibility for non-delivery.

W. Horace Hoskins,
Business Manager.

3452 Ludlow Street, Philadelphia.

We print in this number a very interesting and suggestive letter from the pen of Dr. F. M. Perry on the subject of the most comprehensive and uniform degree for the veterinarian. As this subject is one of great importance and merit to the profession, and as it is still one of the vexatious and unsolved questions before the Association of Veterinary Faculties of North America, the Journal will offer its columns for the next few months for the publication of short letters and opinions bearing on this subject.

Since the experimental stage is already past we think it is well for the public in general to consider the fact that no cities or States should enter into the manufacture of antitoxin or any other drug, but should leave its production, as all other commodities should be, in the hands of the people. Money has already been appropriated by state and local governments where the same was to be used for charitable purposes and in behalf of the poor, and were justified only on the grounds that they would thus be assured of a proper preparation, but it is always a dangerous precedent, and is never supported by public approval, for National, State or local governments to be engaged in the manufacture of productions in competition with the people.

OBITUARY.

JOHN GAMGEE.

John Gamgee, who died on December 19, 1894, was a son of the eminent veterinarian, Mr. Joseph Gamgee, who still survives, and has now reached the age of ninety-three, but retains the full vigor of his health and great intellect.

John Gamgee was born in Florence, Italy, May 3, 1831. His father at an early age obtained an appointment in Italy, where he spent a number of years in gaining knowledge and experience from the celebrated schools there. His son John was sent to study anatomy under Professor Pacini, at Florence, and was intended for the medical profession, but changed his course of studies to that of veterinary medicine. He later went to the Imperial School at Alfort, and to the Royal Veterinary College in London, graduating from the latter May 26, 1852. In 1856 he went to Edinburgh as an assistant to Professor Dick, and there filled the Chair of Anatomy with great credit and with great popularity amongst the students. He was devoted to his work, assiduous in his duties, and lectured twice almost daily, on both anatomy and physiology. Mr. Gamgee at an early period of his life manifested a decided aptitude for engineering, which interested him throughout his whole career, and became the object of all his energy when he severed his connection with the veterinary profession. Mr. Gamgee was a man of great refinement and the most polished manners. He was tall, well built, and of fine appearance, and was greatly esteemed by a wide circle of friends.

REVIEWS.

Friedberger and Fröhner's *Pathology and Therapeutics of the Domestic Animals.* Translated by Prof. W. L. Zuill. The second volume of this most excellent work has just reached us, covering the diseases of the organs of locomotion, nervous system, organs of respiration, chronic constitutional diseases, infectious and epizootic diseases. Like its predecessor, it is

fraught with valuable information, stated in a clear and concise manner, added to which are many very valuable annotations from the French translation and from the pen of Prof. Zuill, to whom we owe a debt of gratitude for placing these volumes within the reach of English-speaking and reading veterinarians. When our libraries are enriched by such valuable additions it makes one feel that no longer is one's professional work hindered or unguarded by a valuable defence in time of need. The printer's art has been well exemplified in these volumes, and we sincerely trust that the sale of this work will be so gratifying that the author with others will feel justified in adding other German and French works to our English veterinary libraries.

Antisepsis and Antiseptics. Buchanan, Terhune Co., Newark, N. J. The busy practitioner of veterinary science will find this concise, well-filled little book well worth reading. Besides brushing one up on rusty points and conveying much valuable knowledge, it epitomizes the history of antiseptic medicine in a brief, interesting, and concise manner. The future of surgery under the better searchlight of antisepsis will continue to prove a daily record of valuable accessions and triumphs in modern surgery.

CORRESPONDENCE.

DEAR MR. EDITOR: I notice in the February issue of the JOURNAL an interesting paragraph among the editorials on the subject of "The Necessity for a Uniform Professional Degree or Title," in which the position is taken that the degree or appellation V.S., or the words Veterinary Surgeon, would be quite sufficient for the practitioner of our science. Would you allow me in all charitableness and kindness just a word in regard to the same? Professional degrees or titles have generally been rendered in Latin from time immemorial, and I can see no reason why we, as a branch of one of the learned professions, should break precedent in this regard. In the first place, there is no such thing as a veterinary surgeon any more than a veterinary dentist, etc., there being no schools or colleges for the special training of those two branches. We are all veterinary surgeons, veterinary physicians, and veterinary dentists, for that matter.

Granting that to be the case, the title Veterinary Surgeon would certainly be a misnomer, and consequently the misuse of the device V.S. becomes at once apparent. D.V.S. would come nearer the point, provided it was intended to stand for "Doctor of Veterinary Science" (not surgery). But even this would be a little far-fetched; and also to use the letters V.M.D., as given in this order, would simply be to put the cart before the horse, which, figuratively as well as literally, is always confusing.

Medicine is the word used to express medical science in general, and one who has graduated from a college in which a general course of medical science is given receives the degree of "Medicinæ Doctoris," the abbreviation of which to M.D. is so familiar to us all. Now, the veterinarian is a graduate from a similar course in (veterinary) medical science, and therefore what else can he receive but the degree of "Medicinæ Doctoris Veterinaire," which, abbreviated, would, of course, be read M.D.V.; and not V.M.D., nor D.M.V. This is simply in accordance with the rules of grammar and the traditions of the (human) medical profession, which are far older than our established branch of the science, and which we as yet have no reason to change. If we do nothing else, let us start right by hanging out a shingle that, while simple and plain, shall be worded and lettered correctly, according to the regulations of etymology and syntax, for we can in no wise afford to sacrifice proper construction and clearness for mere simplicity. Let us no longer, then, insult the intelligence of the educated public by displaying mystifying and absurd titles, but instead present to them on our door-plates a clear-cut appellation that shall convey its exact and true meaning. F. M. Perry, M.D.V.

Houlton, Maine.

REPORTS OF CASES.

A. J. Harrison, M.B., President of the Bristol Medico-Chirurgical Society, in a recent address before that Society, referring to his experiences in the Clifton Zoological Gardens, related an account of the sudden death during the night of the finest and apparently healthiest lion of the gardens up until two months before. Autopsy revealed an enormous internal hemorrhage

from the spleen, which organ had probably ruptured during the exertion of coitus. He looked upon the splenic enlargement as arising from hyperæmia and increase in the lymphatic and vascular elements, but could only conjecture as to etiology. He asks the question, "Are lions subject to malarial attacks?" When first noticed ill his breathing was much disturbed, as in pneumonia.

Another case of ingrowing nails, demanding extraction, was finally accomplished by the use of the "Cramp cage," where, by limiting the space in which he could move, the paw was pushed out and a dextrous movement enabled seizure of the claw with a pair of carpenter's pincers and, aided by the vigorous movements of the animal, extraction was accomplished. The animal, a half-hour later, seemed to appreciate the result accomplished and became perfectly calm.

A third case of much interest in a lion but four-and-a-half months old, found dead in its cage after ailing for three or four days, with distressed breathing and loss of appetite and but little desire for water, exhibited on post-mortem distention of the pericardium, with a semi-purulent fluid of the consistency of gruel tinged with blood. Dr. Harrison considers lions short-lived when kept in captivity. One dying at sixteen years of age he considered due to senile decay.

The death of a lioness during parturition from rupture of the right horn of the uterus after being in labor for five days. One cub had been born, the other engaged in the passage.

SELECTION.

GUERNSEY BREEDERS' ASSOCIATION.

THE Guernsey Breeders' Association held their annual meeting at Philadelphia, on January 28. The President, Mr. Silas Betts, in his annual address made the following statement referring to tuberculosis among bovines, that he was convinced long ago that many of the veterinary profession had made a mistake of taking the effect for the cause; that the disease can never be exterminated by the slaughtering of cattle and the use of tuberculin; that the infection was from the city to the country, not from the country to the city; that biology does not justify the veterinarians in their statement that the thoroughbred and the closebred are most likely to be affected. He said

that we should have State Boards of Health for the inspection of premises, but the dairymen should have chief charge of their own property and premises.

Dr. Samuel G. Dixon, of the Academy of Natural Sciences, referring to the danger from the disease in milk, that the people were unnecessarily alarmed regarding the danger of contracting tuberculosis from cows' milk, and that the physicians in Pennsylvania have much difficulty in persuading their patients to use cows' milk liberally without more or less nervous tension on the part of the sick; further, that a large majority of the bacteriologists of the world have searched most diligently for the tubercle bacilli in the milk of cows suffering from consumption, and yet have only found the germs in that taken from animals whose udders were affected, and that in incipient tuberculosis these glands are rarely affected, and that thus the danger is greatly lessened. In answer to the questions regarding the compulsory use of tuberculin as a diagnostic agent for tuberculous cattle, he replied: "I can answer most emphatically that I believe and know it would be a grave mistake; while admitting the value of tuberculin as a useful diagnostic agent, that at the same time it is a powerful poison that is surrounded by possible dangers." He claimed to have produced immunity in animals in laboratory experiments by tuberculin, and produced a predisposition to the disease by the use of larger doses of the same material. He further stated that he believed by its general and indiscriminate use in cattle as a diagnostic agent a comparatively harmless tuberculosis would often be fanned into a condition that would render innocuous milk poisonous to the consumers. He thought as a diagnostic agent it should be only used in conspicuous cases.

A letter from Freudenreish, of Berne, Minister of Agriculture of Switzerland, concerning the use of tuberculin, said that its use was permitted by the government he represented for detecting tuberculous cattle. Quoting Professor Guillehean, of the Berne Veterinary School, as unfavorable to its use, on the grounds that while it detects it generalizes the disease in two or three weeks, where the disease might have been latent for years; further, that he believes cattle are always contaminated by the servants or attendants.

Dr. W. L. Zuill, of Philadelphia, at the same meeting, referring to the question of tuberculosis and the use of tuberculin as a diagnostic agent, said: "There is no question but that the danger scare which has been given to the public concerning the use of milk has been greatly exaggerated. Statistical experimentations have proven this over and over again, and they conclusively show that the milk from a cow with chronic or encysted tubercular centres is not necessarily dangerous or unfit for food, as it may contain neither the spore nor the germ of the disease, and that tuberculin is far from being the infallible diagnostic agent that some claim for it. The first investigation in the United States to determine the diagnostic value of this medicament in tubercular disease of cattle was made by a committee of the veterinary faculty of the University of Pennsylvania, of which I was chairman. The conclusions reached by that committee have been corroborated by every similar investigation since that time; they all show that tuberculin will not give a reaction in every case of tubercular disease, and that it will give a reaction where there is no tuberculosis in cases of chronic pneumonia, actinomycosis, sarcoma, contagious pleuro-pneumonia, etc. Therefore it is not reliable in diagnosis.

"In addition to its unreliability it is positively dangerous, inasmuch as it

may change the milk of a dairy which was perfectly pure and harmless into a noxious product, by changing a chronic and encysted tubercular centre into an acute miliary tuberculosis, thus filling the milk with germs and spores, rendering it dangerous, virulent and unfit for food.

"This form of the disease is probably never seen in cattle, except as the result of a tuberculin injection, as the natural course of the disease is always chronic, and it is only when it has progressed until there is a general infection, including a tubercular mammitis, that the milk becomes dangerous. This condition may easily be recognized by the physical condition of the udder, or by bacteriological examination of the milk.

"We, as veterinarians, have no right to jeopardize a man's property by injecting his cattle with tuberculin, nor to slaughter his animals in an endeavor to prove that they produce diseased milk, as the finding of tubercular lesions is not proof of this fact. Does the law allow a building inspector to tear down and destroy a man's house in order to find out whether or not it is properly built, and then ask him to rebuild it? Then why should the law allow a dairy inspector to kill a cow in order to prove that her milk product was unwholesome. Would it not be more reasonable, more logical, more in accord with the dictates of common sense to first examine that product microscopically and chemically, and thereby prove that it is unfit for food and dangerous to human life. Such an examination can be made with less loss of time, with more certainty and less expense, and when made has a more definite and fixed value than any test to which the animal could be subjected.

"It is agreed that milk is not likely to contain bacilli unless the udder is affected with the disease, and the percentage of cows with tubercular mammitis is very small. The most recent experiments go to prove that milk containing tubercular bacilli when diluted with other milk to the extent of one part to fifty is rendered innocuous as an article of food, or at least reduces the danger to a minimum.

"There are hundreds of human beings who would be alive to-day, so far as the disease of tuberculosis (which they had) is concerned, if, in the excitement following the announcement of Koch's cure, they had not submitted themselves to the treatment. The inoculation broke down the chronic and encysted centres in their lungs, and they died within a few months after receiving the injection.

"My position is this: I cannot, do not, and will not indorse the indiscriminate use of tuberculin as an agent for diagnosing tuberculosis in dairy cattle. Every new report we get of the general arbitrary use of this substance proves it unreliable. It is not used by law in any country in the Old World, as far as I have been able to learn."

[At the Veterinary Section of the Eighth Annual Congress of Hygiene and Demography, held at Budapest, the subject of tuberculosis was considered by Professors Bang, Hess, Siedamgrotzky, Nocard, Perroncito, and Thomassen especially as to the diagnostic value of tuberculin.

Professor Bang reported 150 cases where the post-mortem examination revealed indications of tuberculosis through the use of tuberculin, and about 190 other cases where tuberculin had been used. Ninety-six per cent. of all those in which a reaction had been established proved to be tuberculous. He reported an instance where at the first test 10 per cent. of presumably

healthy animals reacted; at the second year only one out of 107; and the succeeding spring two out of 122, showing a very rapid decrease in the number after the removal of the diseased ones. He stated that the greatest number of tuberculous animals were found where traffic was most active.

Hess, of Berne, Switzerland, reported that in his experience with tuberculin the animals sometimes exhibited severe symptoms, such as loss of appetite, great depression, and diminished yield of milk, the local swelling often lasting four and five days. Also, that acute tuberculosis was produced, and while he considered tuberculin an excellent diagnostic material, that there was great danger of producing acute miliary tuberculosis.

Professor Nocard, referring to the experiences in France, Saxony, Berlin, and Copenhagen, pointed to the fact that tuberculosis was generally contracted during adult life, and that heredity plays a very insignificant part in its spread. The Paris slaughter-houses exhibited few cases of tuberculosis among calves, while as high as 20 to 25 per cent. of the cows proved diseased. He considered tuberculin the best test, and had rarely seen a falling off in milk production after its use. He recommended all suspected animals to be tested, and those giving a reaction to be isolated from the healthy ones. In 2000 cases tested for tuberculin he had witnessed but two cases of generalized tuberculosis.

President Dammann, summing up the results of the discussion, stated: "The essayists are agreed that tuberculin is a most valuable diagnostic agent. The number of failures with it is practically unimportant. The greater number of those present do not share Hess's view of acute tuberculosis after inoculation, and therefore considered his warning unnecessary." —Ed.]

SOCIETY PROCEEDINGS.

CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION.

The California State Veterinary Medical Association held its regular quarterly meeting at the St. James Hotel, San José, Cal., March 13, 1895.

The President, Dr. C. B. Orvis, called the meeting to order at 3 P.M.

Upon roll-call the following members were found to be present: Drs. Orvis, Spencer, Sr., Spencer, Jr., Egan, Forrest, Sr., Forrest, Jr., Wadams, Schodde, Shaw, Skaife, Fabbi, and Archibald. Visitor, Prof. A. A. Cunningham.

Letters of regret were read from Drs. Pierce and Maclay.

Under the head of reports of Board of Examiners, Committees, etc., there not being a quorum of the Board of Examiners present, the Chair appointed the Secretary to act on the Board in conjunction with the two members of the Board that were present. A recess was declared in order to allow the Board to consider applications for membership. Upon the meeting reconvening the Secretary submitted the following report: Mr. President and Gentlemen: Your Board of Examiners having had under consideration the

applications of Drs. J. R. Shaw, A. B. Wise, J. A. Edmons, J. J. Streets, B. W. Schodde, J. W. O'Rourke, E. J. Creely, S. A. Withers, and R. A. Withers, respectfully recommend that they be elected to membership; also having had under consideration the applications of O. C. Baldy and J. Trullinger, respectfully recommend that their application be rejected. Signed by Drs. Spencer, Sr., Egan, and Archibald. On motion, duly seconded, the report was accepted and placed on file.

The Committee on Legislation was then called upon to report. Owing, however, to the absence of the Chairman, Dr. Spencer, Sr., gave a partial report which was completed by the Secretary. The report was accepted and the Committee discharged. In this connection Dr. Spencer, Sr., made a few remarks regarding the support given the Committee on Legislation by the members of the Association. He stated that the failure on the part of the Committee to obtain the passage of Assembly Bill No. 210 was entirely due to the lack of interest taken in the matter by the members. The Secretary also made a few remarks on this subject, in which he stated that it was impossible for one or two members of the Association to obtain any legislation alone; he also stated that where a legislator had been interviewed by a veterinarian from his district he invariably proved a friend to any bill introduced by the profession.

Under the head of Application for Membership, the Secretary presented the name of C. L. Megowan. The name was referred to the Board of Examiners. Under the head of Admission of New Members, the following gentlemen were elected: Drs. J. R. Shaw, A. B. Wise, J. A. Edmons, J. J. Streets, W. B. Schodde, J. W. O'Rourke, S. A. Withers, J. A. Withers, and E. J. Creely.

Under the head of New Business, Dr. Wadams moved that the thanks of the Association be tendered Assemblyman Berry for the great interest he had taken in Assembly Bill No. 210. Carried.

On motion by the Secretary, a committee consisting of Drs. Wadams and Spencer, Sr., were appointed to convey the thanks of the Association to Assemblyman Berry in a suitable manner.

The subject matter of sending a delegate to the next meeting of the United States Veterinary Medical Association was brought up by Dr. R. A. Archibald, who endeavored to portray to the members the necessity of such action on their part. He also stated that it was his opinion that if the Association evinced sufficient interest in the matter during the next two years that the United States Veterinary Medical Association would decide upon California as the place of meeting in the year 1897.

Dr. Spencer, Sr., also spoke on this subject in the same strain as the Secretary had done.

The Secretary moved that the Association levy an assessment of five dollars per capita for the purpose of defraying expenses of a delegate to the next meeting of the United States Veterinary Medical Association, also that the Secretary be instructed to collect same, and at the same time notify the members that at the next quarterly meeting, held in June, a delegate would be elected. The motion was duly seconded, and after considerable favorable discussion it was eventually adopted unanimously.

Prof. W. F. Skaife, in behalf of the Faculty of the California Veterinary College, extended to the Association an invitation to hold their meeting in the college building when they again meet in San Francisco.

The following resolutions were presented and adopted unanimously:

Whereas, It is a notorious fact that during the twenty-ninth, thirtieth, and thirty-first sessions of the State Legislature, one Thomas Carpenter, a veterinary surgeon and a resident of Oakland, did use all means in his power to defeat any and all movements toward the advancement of the veterinary profession in the State; and,

Whereas, This action on the part of said Thomas Carpenter was wholly due to the jealous and abject sentiment which rankled in his breast toward the members of the California State Veterinary Medical Association and other members of the veterinary profession in the State, who have always and are yet struggling to gain public recognition as practical sanitarians and as scientific gentlemen; and,

Whereas, The veterinary profession in the State of California has suffered through the actions and machinations of the said Thomas Carpenter; and,

Whereas, The said Thomas Carpenter is at the present time endeavoring to gain the position of Meat and Milk Inspector to the Board of Health of the city of Oakland; therefore be it

Resolved, That we, the members of the California State Veterinary Medical Association, do hereby protest against the appointment of the said Thomas Carpenter to the office of Meat and Milk Inspector in the city of Oakland, as we believe that such action on the part of the health authorities would work a hardship on the people of the city of Oakland and at the same time be a detriment to the interests of the veterinary profession throughout the State of California; and be it further

Resolved, That a copy of these resolutions be forwarded by the Secretary to the Oakland Board of Health and that a copy be spread upon the minutes.

Upon motion, the President, Dr. C. B. Orvis, was authorized to represent the Association at the next meeting of the State Sanitary Convention, to be held in San Francisco in April.

The Secretary moved that when this meeting adjourns it adjourns to meet in Stockton, on Wednesday, June 12, 1895.

Upon motion, the Association took a recess until 8 P.M.

Evening Session. The Association reconvened at 8 P.M., President Orvis in the chair.

Under the head of Reading of Papers and Discussions, the President, Dr. C. B. Orvis, delivered his inaugural address, in which he thanked the members for the great honor they had conferred upon him. He reviewed the progress of the profession in this State in the past nine years, also the efforts of the profession to obtain suitable legislation. He dwelt considerably on the prevalence of glanders, tuberculosis, and other contagious and infectious animal diseases, and he deplored the lack of proper laws for the control of the same. The address was listened to with much interest by the members present, and the applause that followed its reading showed the manner in which it was appreciated.

The next business on the programme was the reading of a very interesting and instructive paper by Dr. A. H. Spencer, entitled "Antiseptic Surgery."[1] As usual, the Doctor submitted for the consideration of the mem-

[1] Will be published in May number.

bers a spicy, practical, and well-written thesis. The discussion that followed demonstrated the fact that the subject was well chosen, as the members to a man participated in the discussion and showed by their attention and interest that they considered it to be one of the most important subjects that could have been submitted to them.

Owing to the unavoidable absence of Drs. Faulkner and Jackson, who were also appointed essayists for this meeting, no more papers were presented, but several interesting cases were reported by the different members.

Upon motion, a vote of thanks was tendered Drs. Orvis and Spencer, Sr., for the able and zealous manner in which they had entertained the meeting.

The Chair appointed the following named gentlemen as essayists for the next meeting: Drs. Fox, Skaife, Eddy, and Fabbi.

The Secretary made his regular quarterly statement regarding the advisability of as many of the members as possible joining the U. S. V. M. A. He stated that he could supply application blanks to those who wished to make application for membership.

Drs. H. A. Spencer and H. F. Spencer extended to the members a cordial invitation to meet at their hospital and participate in a clinical entertainment; in behalf of the members the Chair accepted the invitation in the same spirit it was given.

There being no further business before the meeting, it adjourned to meet in Stockton on June 12, 1895.

Clinical Entertainment. On March 14, 1895, at 9 A.M., the members of the California State Veterinary Medical Association assembled at the veterinary hospital at 224 E. St. John Street, San José, on invitation of Drs. H. A. Spencer and H. F. Spencer, to participate in a clinical entertainment.

The first and second operations on the programme were the castration of a double cryptorchid and a single cryptorchid by Dr. H. A. Spencer. In the performance of these operations the Doctor demonstrated the fact that he has no superior as an operator in the United States.

The third operation on the programme was the extirpation of a champignon by Dr. Archibald, ably assisted by Dr. H. F. Spencer. The operator demonstrated his method of operating on these cases on the operating table. The tumor resected was quite large, and as far as its removal was concerned it was successfully accomplished.

The fourth operation on the programme was ovariotomy on a bitch, by Dr. Archibald. This proved to be a peculiar case, inasmuch as it was found, when the operation was well advanced, that the animal was pregnant; however, the operation was completed, and from the latest accounts the bitch seemed to be doing well.

The fifth operation was the application of the actual cautery for the cure of side-bones. This operation was demonstrated by Dr. J. R. Shaw, who performed the operation with the thermo-cautery. The members were loud in their praises of the manner in which the operation was performed.

The sixth operation was the removal of a number of hypertrophied lymphatic glands from the neck of a dog. This operation was performed by Dr. H. F. Spencer, who gave ample proof of his ability as a surgeon of no ordinary skill and ingenuity.

The seventh operation was the amputation of the leg of a fox-terrier bitch at the tibial region. This operation was performed by Drs. Spencer, Jr. and Archibald.

The members highly commended the manner in which the entertainment was provided for by the San José veterinarians, and upon the completion of the seventh and last operation they dispersed to their respective localities with the feeling that the time purloined from their business was by no means thrown away, and all expressed the conviction that clinical entertainments in connection with our meetings were a success, and that in future no ordinary circumstances would prevent them from being present at similar entertainments.

R. A. ARCHIBALD, V.S.,
Secretary.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

THE March meeting of the Keystone Veterinary Medical Association was called to order by President Lintz at the office of Dr. W. H. Hoskins, No. 3452 Ludlow Street, on the 12th ult.

The following members were present: Drs. Bridge, Eves, Goentner, Hoskins, J. R. Hart, Lintz, Rhoads, and McAnulty; Dr. Allen being the only visitor present.

Dr. Hoskins, as Chairman of the Legislative Committee, reported the bill to place a veterinarian officially on the State Board of Agriculture to have passed both houses, and only wants the Governor's signature to become a law.

The bill to establish a State Board of Veterinary Examiners is in the same position it was a month ago, and now stands a poor show of being considered this session.

The Veterinarians' Examining Board of Ohio meets in April, and have invited Dr. Hoskins to be present.

After this report the qualifications of the known applicants for State Veterinarian under the new law were thoroughly considered and discussed. It was urged that at this particular time a man should be selected who is particularly well fitted and naturally adapted for this work, that the people might learn to repose greater confidence in the profession.

On motion, the President appointed Drs. Hoskins, Bridge, and J. R. Hart a Committee to select from the applicants the one they thought best fitted to honor and advance the profession as State Veterinarian. The Committee after due deliberation selected Dr. Leonard S. Pearson as best qualified and adapted to this work.

The Board of Censors were instructed to look for a larger meeting-room, as the attendance made more room essential. They were also instructed to consider the advisability of reducing the annual dues and see to a revision and reprinting of the By-laws.

The Board of Censors now reported favorable consideration of Dr. Leonard S. Pearson's application for membership, and he was unanimously elected.

Dr. Goentner reported a very interesting case of pernicious anæmia in a running stallion.

The reading of papers was postponed, as the time was taken up with discussion.

The meeting adjourned to meet at the home of Dr. Kooker April 9th.

W. L. RHOADS,
Secretary.

WISCONSIN SOCIETY OF VETERINARY GRADUATES.

THE fifth annual meeting of the Society was held at the Knights of Pythias Hall in Madison, February 6 and 7, 1895. The meeting was called to order by the President, Dr. Woodford, at 2 P.M.

Roll-call showed eight members present, Drs. Arpke, Clark, Laws, Leech, Ormond, Roub, E. D. Roberts, and Woodford, and one visitor, Dr. T. W. Watson.

The minutes of the last meeting were read and approved. The annual reports of the Secretary and Treasurer were read and adopted.

On motion the question of patenting the seal was laid over for a year.

Charges having been preferred against Dr. S. G. Binger by Dr. J. F. Roub, it was moved and carried that he be notified by the Secretary to appear before the Executive Board and show cause why he should not be expelled.

The name of Dr. T. W. Watson was presented for membership and was referred to the Board of Censors, who reported favorably on the application. It was moved and seconded that Dr. Watson be elected a member of the Society. Carried.

The Committee on Legislation presented a bill to regulate the practice of veterinary medicine and surgery. After some slight changes the bill was accepted as corrected.

It was moved and seconded that the Secretary be instructed to send out each year a printed and corrected list of the members to each member. Carried.

Adjourned to 7 P.M.

Evening Session. The Society was called to order by the President.

On motion, Drs. Scott, Clark, and Laws were appointed to present the claims of the veterinary bill before the Legislature.

None of the essayists being present, the Society proceeded to the report of cases. Arguments followed in regard to the conditions after death from lightning.

Dr. Roub reported a case of cerebro-spinal meningitis which brought out a general discussion.

Moved and seconded that Dr. Clark be allowed the privilege of bringing his class before the Society during the reading of essays. Carried.

The election of officers resulted in the following-named gentlemen being chosen for the ensuing year: *President*, J. P. Laws, Madison; *Vice-President*, J. R. Kelso, Baraboo; *Secretary*, W. G. Clark, Beaver Dam; *Treasurer*, C. H. Ormond, Milwaukee; *Censors*, J. F. Roub, Monroe, T. A. Watson, Chippewa Falls, and G. Ed. Leech, Milwaukee.

On motion a vote of thanks was tendered Dr. Leech for his faithful and efficient service during his term of office.

Moved by Dr. Leech and seconded by Dr. Laws, that the Secretary be allowed his annual dues and railway fare to and from the association meetings for his services. Carried.

On motion the Society adjourned until 10 A.M., February 7th.

SECOND DAY. *Morning Session.*

The Society was called to order by the President, Dr. Laws. Roll-call.

Minutes of the last meeting were read and adopted.

Moved by Dr. Leech and seconded by Dr. E. D. Roberts that the Society hold the semi-annual meeting at Chippewa Falls on the second Wednesday in August, 1895. Carried.

A resolution was introduced by Dr. Leech to control the Society in the matter of the appointment of the State Veterinarian. On motion the resolution was laid on the table until the next annual meeting.

On motion the following resolution was adopted:

Resolved, That the Society instruct the Secretary to request the Governor to create a sentiment in favor of the appointment of a veterinarian on the State Board of Health.

On motion the Society adjourned until 2 P.M.

Afternoon Session. The Society was called to order by Dr. Laws at 2 P.M.

Moved and seconded that the central part of the seal be adopted as a lapel button. On motion the original motion was amended, that the Secretary be instructed to ascertain the cost of a gold button of that kind and report at the next meeting. The original motion was then carried.

The names of Christmas Evans and Richard Kuoni were proposed for membership and were referred to the Board of Censors. The Censors reported favorably on the applications. It was moved and seconded that the names be accepted by the Society for membership. Carried.

An interesting paper was then read by Dr. D. Roberts on "Ergotism in Cattle," giving the symptoms and lesions appearing in an outbreak in his practice. It was followed by a spirited discussion of the disease.

On motion the essayist was excused.

Moved by Dr. Leech and seconded by Dr. Arpke, that the members on the programme and not reading papers be requested by the Secretary to read their papers at the next meeting. Carried.

It was moved and seconded that hereafter essayists appointed prepare their papers, and if unable to attend, send them to the Secretary before the meeting, and that the subjects of the essays be included in the invitations. Carried.

On motion a vote of thanks was tendered to the essayist.

The Society then adjourned until the second Wednesday in August, 1895, at Chippewa Falls.

W. G. CLARK,
Secretary.

MISSOURI VALLEY VETERINARY ASSOCIATION.

THE fourth regular meeting of the Missouri Valley Veterinary Association was held in Topeka, Kansas, February 13, 1895, and distanced all other meetings of the Association in numbers and interest. The following gentlemen were present: Drs. Stewart and Barth, Kansas City, Kas.; Wattles, of

Kansas City, Mo.; Moore and Linscott, of Holton, Kas.; Brady, Mayo, and Orr, Manhattan, Kas.; Cook, of Hutchinson, Kas.; Richards, of Emporia, Kas.; McCurdy, Prichard, and Knisely, Topeka, Kas.; McClellan, Lawrence, and Verschelden, St. Mary's, Kas.; Hunter, of Fort Leavenworth, Kas. Messrs. Topping and Stalker, veterinary students of the Kansas City Veterinary College, and Messrs. Brown and White, of the Live Stock Sanitary Board, were present. Letters from Drs. Howard, McCasey, Harrison, Biart, and others were read, regretting their inability to attend.

The Committee on Legislation reported, and were directed to continue in the same capacity.

It was the opinion of all that the Live Stock Sanitary Board should have control of hog cholera and swine plague, and the power to quarantine, which could be done by the Legislature rescinding Section 4411, Laws of 1884; Messrs. White and Brown making timely and valuable suggestions thereon.

The proper disinfection of railroad cars was also considered.

Dr. Mayo's paper on "Cattle Poisoning by Cornstalks" was listened to with great interest, and elicted much discussion.

The stereopticon was used to illustrate many points in meat inspection, which was new to many members.

Dr. Harrison's paper on "Operation for Periodic Ophthalmia" was defended by President Stewart in a most able manner.

Our membership is now thirty, and still growing.

The following resolution was read and unanimously adopted:

Resolved, That this Association condemn the action of so called veterinary dentists or veterinary surgeons in teaching that branch of veterinary science consisting of dental operations upon horses' teeth, castration, and spaying, or any other branch thereof, to men that are not graduates of regular veterinary colleges, as we believe it increases the number of unqualified practitioners, and tends to lower the standard of this profession; and that teaching such men veterinary dentistry or any part of veterinary science by any member of this Association shall be considered as a breach of the Code of Ethics.

Drs. Black, Sihler, Linscott, Brady, Barth, Ernst, and Forbes were appointed by President Stewart to furnish papers for our annual meeting, which will be held at Leavenworth, in June.

The Association gratefully acknowledges the kindness of the professional brethren of Topeka, for entertainment during its stay in Topeka.

S. L. HUNTER, V.S.,
Secretary and Treasurer.

ANNUAL MEETING OF THE AMERICAN VETERINARY COLLEGE ALUMNI ASSOCIATION.

THE Alumni Association of the American Veterinary College held their annual meeting in the College Hall, on Monday, March 25th, at 2 P.M. President Hanson called the meeting to order, after which Secretary Hopper called the roll. Some forty of the members responded to their names.

The report of the Executive Committee was then received, and the following recommendations of the Committee were approved: That the annual

meeting shall hereafter be held at 3 P.M. on commencement day; that the Alumni Association should ask of the Board of Trustees a larger representation than they now accord.

Some eight deaths were reported by the Secretary as having occurred during the past year, as follows: Drs. John S. Saunders, Massachusetts, Class of '76; C. B. Michener, District of Columbia, Class of '76; E. W. Rowland, Wisconsin, Class of '82; J. C. Jackson, New York, Class of '87; P. F. Kiernan, Missouri, Class of '87; Robert L. Leis, New Jersey, Class of '89; Frederick D. Greeley, Pennsylvania, Class of '89; George B. Burchsted, New York, Class of '91. Suitable resolutions were adopted and ordered to be engrossed upon the minutes of the Association, and a copy of the same to be sent to the journals.

The Committee on Revision of Constitution and By-laws reported progress, and asked for more time to consider the many needed changes.

The election of officers for the ensuing year resulted in the choice of Drs. E. B. Ackerman, Class of '91, *President;* Herbert Neher, Class of '87, *Vice-President;* Martin J. Dair, Class of '95, *Secretary;* F. R. Hanson, Class of '95, *Treasurer;* and Bryce Mars, Class of '94, *Librarian.*

J. B. HOPPER,
Secretary.

LEGISLATION.

NATIONAL LEGISLATION.

SALARIES AND EXPENSES, BUREAU OF ANIMAL INDUSTRY.

Extract from Bill No. 8927, House of Representatives. United States Department of Agriculture.

FOR carrying out the provisions of the Act of May 29, 1884, establishing the Bureau of Animal Industry, and of the Act of August 30, 1890, providing for an inspection of meats and animals, also the provisions of the Act of March 3, 1891, providing for the inspection of live cattle, hogs, and the carcasses and products thereof which are the subjects of interstate and foreign commerce, and for other purposes, the sum of $800,000; and the Secretary of Agriculture is hereby authorized to use any part of this sum he may deem necessary or expedient, and in such manner as he may think best, in the collection of information concerning livestock, dairy and other animal products, and to prevent the spread of pleuro-pneumonia, tuberculosis, sheep-scab, and other diseases of animals, and for this purpose

to employ as many persons as he may deem necessary, including $1000 additional temporary compensation to the Chief of the Bureau of Animal Industry, and to expend any part of this sum in the purchase and destruction of diseased or exposed animals, and the quarantine of the same whenever in his judgment it is essential to prevent the spread of pleuro-pneumonia, tuberculosis, or other diseases of animals from one State into another, and for printing and publishing such reports relating to animal industry as he may direct; and the Secretary is hereby authorized to rent a suitable building in the District of Columbia, at an annual rental of not exceeding $1200, to be used as a laboratory for said Bureau of Animal Industry (23); *Provided*, That Sec. 2 of the Act entitled "An Act to provide for the inspection of live cattle, hogs, and the carcasses and products thereof which are the subjects of interstate commerce, and for other purposes," approved March 3, 1891, be amended to read as follows:

"SEC. 2. That the Secretary of Agriculture shall also cause to be made a careful inspection of all live cattle, the meat of which, fresh, salted, canned, packed, cured, or otherwise prepared, is intended for exportation to any foreign country, at such times and places, and in such manner as he may think proper, with a view to ascertain whether said cattle are free from disease, and their meat sound and wholesome, and may appoint inspectors who shall be authorized to give an official certificate clearly stating the condition in which such cattle and meat are found, and no clearance shall be given to any vessel having on board any fresh, salted, canned, corned, or packed beef, being the meat of cattle killed after the passage of this Act, for exportation to and sale in a foreign country from any port in the United States until the owner or shipper shall obtain from an inspector appointed under the provisions of this Act a certificate that said cattle were free from disease and that their meat is sound and wholesome."

(24.) Also that Sec. 4 of said Act be so amended as to read as follows:

"SEC. 4. That said examination shall be made in the manner provided by rules and regulations to be prescribed by the Secretary of Agriculture, and after said examination the carcasses and products of all cattle, sheep, and swine found to be free of disease and wholesome, sound, and fit for human food shall be marked, stamped, or labelled for identification as may be pro-

vided by said rules and regulations of the Secretary of Agriculture. Any person who shall forge, counterfeit, simulate, imitate, falsely represent, or use without authority, or knowingly and wrongfully alter, deface, or destroy any of the marks, stamps, or other devices provided for in the regulations of the Secretary of Agriculture, of any such carcasses or their products, or who shall forge, counterfeit, simulate, imitate, falsely represent, or use without authority, or knowingly and wrongfully alter, deface, or destroy any certificate or stamp provided in said regulations, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be punished by a fine not exceeding $1000, or imprisonment not exceeding one year, or by both said punishments, in the discretion of the court."

(25.) The Secretary is hereby authorized to make such rules and regulations as he may decide to be necessary to prevent transportation from one State or Territory or the District of Columbia into any other State or Territory or the District of Columbia, or to any foreign country, of the condemned carcasses or parts of carcasses of cattle, sheep, and swine which have been inspected in accordance with the provisions of this Act. Any person, company, or corporation owning or operating any such slaughter-house, abattoir, or meat-curing, packing, or canning establishment, or any employé of the same, that shall wilfully violate any provision of this Act shall be deemed guilty of a misdemeanor, and on conviction thereof shall be punished for each offense by a fine not exceeding $1000, or imprisonment not exceeding one year, or by both said punishments, in the discretion of the court.

Quarantine stations for neat cattle: To establish and maintain quarantine stations, and to provide proper shelter for and care of neat cattle imported at such ports as may be deemed necessary, $12,000.

That whenever the Secretary of Agriculture shall certify to the (26) President of the United States what countries or parts of countries are free from contagious or infectious diseases of domestic animals, and that neat cattle and hides can be imported from such countries without danger to the domestic animals of the United States the (27) President of the United States may suspend the prohibition of the importation of neat cattle and hides in the manner provided by law. That the President of the United States be and is hereby authorized to cause correspondence and negotiation to be had, through the

Department of State or otherwise, with the authorities of the Kingdom of Great Britain, for the purpose of securing the abrogation or modification of the regulations now enforced by said authorities which require cattle imported into Great Britain from the United States of America to be slaughtered at the port of entry, and prohibiting the same from being carried alive to other places in said Kingdom.

That the Secretary of Agriculture shall determine and certify to the Secretary of the Treasury what are recognized breeds and pure bred animals, under the provisions of paragraph (28) three hundred and seventy-three of the (29) Tariff Act of (30) 1894.

STATE LEGISLATION.

Massachusetts.

Synopsis of Bill.—A bill has been introduced into the Legislature of Massachusetts to provide for the registration of veterinary physicians and surgeons.

Section 1 provides that said board be composed of five graduates from legally chartered veterinary college or colleges, and who shall have been in active practice for a period of ten years, and to provide for their term of office and any vacancies that may occur and for removal for cause of any member of said board.

Sec. 2 provides for the organization of the board in the election of chairman and secretary. The secretary shall give to the treasurer of the Commonwealth a bond in the penal sum of $2000 for the faithful discharge of his duties. Also, that three regular meetings shall be held in each year in February, June, and October.

Sec. 3 provides for the notification of all veterinary practitioners of the provisions of the act through newspaper channels. Graduates and non-graduates who have been in continuous practice for a period of three years immediately preceding the passage of the act shall be entitled to registration upon the payment of the fee of $1.

Sec. 4 provides for revoking certificates of registration of any one convicted of a crime in the course of professional business,

and the cancellation of the registration and the payment of all fees into the treasury of the Commonwealth.

SEC. 5 provides for the compensation and expenses of the board.

SEC. 6 provides for the report of all registrations, moneys received and expended, the same to be open to inspection in the office of the Commonwealth. Also fixes the annual report to the Governor, together with a statement of the condition of veterinary science and report of the board's work during the year.

SEC. 7 provides that said board shall investigate the violations of the act, and place the same in the hands of the proper prosecuting officers.

SEC. 8 fixes January 1, 1896, as the day when all applicants for registration shall be filed. Applicants must be twenty-one years of age, of good moral character, and no person shall be entitled to register without examination after said day.

SEC. 9 provides for the character of examination.

SEC. 10 provides penalty for practice without registration.

SEC. 11 exempts commissioned officers of the United States service, or visiting physician or surgeon from another State, and does not prohibit gratuitous services.

SEC. 12. This act shall take effect upon its passage.

DISTRICT OF COLUMBIA.

Synopsis of Bill.—The act to regulate the practice of veterinary medicine and surgery of the District of Columbia was not presented at the session of Congress just closed, owing to the fact that there was little chance of its passage at the late time of the preparation of the bill.

SECTION 1 of the bill calls for a commission to be known as "The District of Columbia Veterinary Medical Board," to consist of three commissioners, members in good standing of the Veterinary Medical Association of the District of Columbia, who shall be appointed by the Commissioners of the District of Columbia every three years, with power to adopt such laws and regulations as are necessary to carry into effect the provisions of the act.

SEC. 2 makes it unlawful for any person or persons to practice veterinary medicine or surgery in the District of Columbia

without a diploma from a duly authorized college, and having passed a satisfactory examination before the commissioners.

SEC. 3 provides for the meetings.

SEC. 4 provides for the examination of diplomas as to their genuineness, and written or oral, theoretical and practical, examinations to be satisfactory to the board before the issuing of the license.

SEC. 5. All examinations of non-graduates shall be made by the board, and must take place within six months after the passage of the act.

SEC. 6 reads as follows: That any person shall be regarded as practicing veterinary medicine and surgery within the meaning of this act who shall append to their names the letters V.S., or D.V.S., or the words veterinary surgeon, veterinarian, or veterinary dentist, or who shall prescribe, advise or apply any drugs or medicines or other agents, or who shall perform any operation for the treatment, cure, or relief of any sick or diseased domestic animal, or who shall publicly profess to do any of these things.

SEC. 7 provides for the register of all practitioners qualified under the act, the same to be published at least once a year in two newspapers in the city of Washington.

SEC. 8 provides for a register of all those who are practicing under a license of the board, and that no non-graduate shall be allowed to register who has not been in practice for five years preceding the passage of the act.

SECS. 9 and 10 give power to reject applicants for registration whose examination papers and diplomas are not satisfactory, and that no persons shall practice after six months from the approval of the act without such examination and registration.

SEC. 11 provides penalties for violations of the act.

SEC. 12 provides that the board shall be a prosecutor in all cases of violation.

SEC. 13 provides that certificates of registration shall be filed with the health officers of the District of Columbia.

SEC. 14 provides that this act shall take effect immediately after its passage.

WE regret to learn that the efforts to secure a State Veterinarian in California have proved unavailing, though earnest work was done by the veterinarians for its accomplishment. We wish them better fortune next time.

THE bill to regulate the practice of veterinary medicine and surgery pending before the Wisconsin State Legislature failed to become a law. Veterinarians must learn as individuals and as component parts of their professional organizations that one and all must work early and late to secure such recognition, and that no matter how earnest and efficient the officers may be the members must give them an unbroken column of support. Never was this fact more forcibly impressed upon the profession of any State than it was in Pennsylvania the past winter.

ITEMS OF INTEREST.

An effort is being made to establish a chair of scientific horseshoeing with lectures on the anatomy of the horse's foot, etc., in conjunction with the new Lewis Institute that is to be established in Chicago.

Under a pending law now before the State Legislature of New York State it is proposed to create a State Veterinarian. We trust the veterinarians of New York State will not let this opportunity for official recognition in the councils of the State be lost.

We have just learned that Cornell is again to be favored with an appropriation of $100,000 for the prospective veterinary department at that institution. We feel like congratulating New York State on her liberality to the profession and to this very deserving university.

The March number of *Peterson's Magazine* contains a very interesting account of the growth of the University of Pennsylvania. It is profuse with illustrations, among which we note the lecture-room of the veterinary department and the canine hospital, the latter said to be the most complete and best-arranged in the world.

Illinois is said to lead among the States in the number of horses owned, with 1,366,000 to her credit. New Jersey at the foot of the list with 88,000. Values average from $26 per head in Texas to $74 in the New England States. Missouri with

265,000 mules ranks first at an average of $41 per head. New Jersey possesses 8000, averaging $85 per head.

Much difference of opinion prevails in New York State as to the wisdom of passing, in the present form, the law to enforce an examination of all patent and proprietary medicines before being allowed to be sold. This should be done in every State, and the public more fully secured from the dangers of these nostrums that live by skilful advertising, playing upon the ignorance and cupidity of an innocent public. It should be an easy matter to arrange these differences of opinion, as they seem to only exist as to the methods of procedure.

The disjointed condition of the present laws in New York State relative to infectious and contagious diseases of live stock can hardly be said to be what should be expected of the Empire State. Aside from its expensive aspect it is too slow, too dangerous, and utterly methodless. With a tuberculosis commission to consider only bovine tuberculosis; with glanders under the control of the State Board of Health, and other diseases under the control and management of the Commissioner of Agriculture, what could be expected but dissatisfaction, annoyance, and indifference? All these diseases should be under one management: a Veterinary Department of the State Board of Agriculture, or a Live Stock Sanitary Board. No better field of work offers itself than the cure of this evil by the N. Y. S. V. M. A.

POINTS WORTH KNOWING.

The tongue of a giraffe is nearly eighteen inches long.

The average strength of a horse is seven and one-half times greater than a man.

Opossums are said to be the only animals that make a more elaborate toilet than cats.

The wild tamarind when eaten by horses is said to be followed by a loss of hair from the mane and tail.

An examination under the State Board of Veterinary Medical Examiners was held at Columbus, Ohio, on April 2d.

WELLCOME LIBRARY INSTITUTE

Ch. Marchand's Trade Mark

GLYCOZONE.

PREVENTS FERMENTATION OF FOOD IN THE STOMACH.
MOST POWERFUL REMEDY FOR HEALING PURPOSES. CURES:
DYSPEPSIA, GASTRITIS, ULCER OF THE STOMACH, HEART-BURN.

Glycozone is sold only in 4-oz., 8-oz., and 16-oz. bottles. Never sold in bulk.

CH. MARCHAND'S
PEROXIDE OF HYDROGEN

(MEDICINAL) H_2O_2 (ABSOLUTELY HARMLESS.)

MOST POWERFUL BACTERICIDE AND PUS DESTROYER.
ENDORSED BY THE MEDICAL PROFESSION.
UNIFORM IN STRENGTH, PURITY AND STABILITY.
RETAINS GERMICIDAL POWER ANY LENGTH OF TIME.

USED BY THE HOSPITALS OF THE U. S. ARMY.

Send for free book of 88 pages giving articles by the following contributors:

DR. PAUL GIBIER, of N. Y., DR. S. POTTS EAGLETON, of Phila., Pa., DR. CHAS. P. NOBLE, of Phila., Pa., DR. C. A. PHILLIPS, of Boston, Mass., DR. J. H. DeWOLF, of Balti., Md., DR. JOHN V. SHOEMAKER, of Phila., Pa., DR. W. S. MULLINS, of Henderson, Ky., DR. CHAS. W. AITKIN, of Flemingsburg, Ky., DR. H. F. BROWNLEE, of Danbury, Conn., DR. J. LEWIS SMITH, of N. Y., DR. J. MOUNT BLEYER, of N. Y., DR. A. S. TUCKLER, DR. N. H. HAIGHT, of Oakland, Cal., DR. W. B. DEWEES, of Salina, Kas., DR. C. E. PERKINS, of Sandusky, O., and many others.

NOTE.—Avoid substitutes—in shape of the commercial article bottled—unfit, unsafe and worthless to use as a medicine.

Ch. Marchand's Peroxide of Hydrogen (Medicinal) is sold only in 4-oz., 8-oz., and 16-oz. bottles, bearing a blue label, white letters, red and gold border, with his signature. Never sold in bulk.

PHYSICIANS WILLING TO PAY EXPRESS CHARGES WILL RECEIVE FREE SAMPLES ON APPLICATION.

BOTH OF THE ABOVE REMEDIES ARE PREPARED ONLY BY

Charles Marchand

☞Mention this publication.

Chemist and Graduate of the "Ecole Centrale des Arts et Manufactures de Paris (France).

SOLD BY LEADING DRUGGISTS. Laboratory, 28 Prince St., New York.

Colts Get Hurt.

Phénol Sodique is a liniment for them; for other animals; human flesh as well.

There is nothing that mends so quick.

If not at your druggist's, send for circular.

HANCE BROTHERS & WHITE, Pharmaceutical Chemists, Philadelphia.

Look out for counterfeits. There is but one genuine. Better cut the advertisement out and have it to refer to.

HARVARD UNIVERSITY

School of Veterinary Medicine.

The course is a *graded* one of three years of nine months each. There are unequalled facilities for practical instruction in all branches; and the Hospital, maintained in connection with the School, places a large practice under the constant observation of students.

For illustrated catalogue, and all further information, apply to

CHARLES P. LYMAN, F.R.C.V.S, DEAN.

Graduates of this School are eligible for membership in the United States Veterinary Medical Association.

OHIO VETERINARY COLLEGE

CINCINNATI, OHIO.

Incorporated under the Laws of the State of Ohio.

Special Attention Given to Practical Instruction.

SESSION OF 1894-95 COMMENCES OCTOBER 5th.

For further information, apply to

NEIL B. JONES, PRINCIPAL,
135 Sycamore St., Cincinnati, Ohio.

University of the State of New York.

American Veterinary College

139 & 141 WEST 54th STREET, NEW YORK.

Incorporated and Organized 1875, under the General Laws of the State of New York.
Re-incorporated and Re-organized 1888 by Special Act of the
Legislature of the State of New York.

This School has a graded course of instruction which extends *over three years.* The Sessions open in the first week of October of each year. Besides the general curriculum, practical instructions with Laboratory work are given in Chemistry, Toxicology, Histology, Surgical Pathology, Bacteriology, Minor and Major Operative Surgery. For the new catalogue and further information apply to A. Liautard, M.D., V.M., Dean.

University of the State of New York.

New York College of Veterinary Surgeons

AND

SCHOOL OF COMPARATIVE MEDICINE.

CHARTERED 1857.

The Course of Instruction is Graded and Extends Over Three Years of Six Months Each.

During the past year many improvements have been made. The School has moved into a new building, the Hospital accommodations have been enlarged, new Laboratories for practical instruction in Histology, Chemistry and Bacteriology have been equipped, and the number of Courses given has been materially increased. For circular giving detailed information, apply to

H. D. GILL, V.S., Dean.

154 East 57th Street., NEW YORK CITY.

THE KANSAS CITY VETERINARY COLLEGE,

310 EAST TWELFTH STREET,

KANSAS CITY, MISSOURI.

Applicants for admission must conform to the rules adopted by the Association of College Faculties of North America. Catalogues sent on application to the Secretary.

JUNIUS H. WATTLES, D.V.S.

UNIVERSITY OF PENNSYLVANIA.

VETERINARY DEPARTMENT.

The course of instruction is graded and extends over three years, with one session beginning the 1st of October and ending the last of May in each year.

Practical instruction, including Laboratory Work in Pharmacy, Chemistry, General Biology, Histology, Physiology, Comparative Osteology, Dissecting, Botany, Pathology, Bacteriology, and Inspection of Meat and Milk, with personal care and treatment of animals in the hospital and clinics, is part of the regular course without additional expense. *For Catalogue, address*

JOHN MARSHALL, M. D., *Dean of Veterinary Faculty.*

Cor 36th and Pine Streets, Philadelphia.

McKILLIP VETERINARY COLLEGE,

CHICAGO.

The course of instruction commences in October and extends over three years with six months duration.

The course is based upon a broad, scientific and practical curriculum.

It affords students the advantage of work in the routine business of the largest practice in this country. Students who wish to enter the college must have the pre-education agreed upon by the ASSOCIATION OF VETERINARY FACULTIES OF NORTH AMERICA. For catalogue and information apply to

Prof. OLAF SCHWARZKOPF, Dean,
1639 Wabash Ave., Chicago.

UNITED STATES COLLEGE OF VETERINARY SURGEONS,

222 C Street, N. W., Washington, D. C.

SESSION 1895-96 BEGINS OCTOBER 1st.

FOR PROSPECTUS AND FULL INFORMATION, ADDRESS

C. BARNWELL ROBINSON, V.S., Dean.

THIOFORM

AN ODOURLESS SUBSTITUTE FOR IODOFORM

Sole Agents for the United States of America

OTTO HANN & BRO.,

268 Water Street, N. Y.

☞ All the authorities point out the following advantages in THIOFORM:—1. Its odourlessness. 2. Its great antiseptic action. 3. Its desiccative action. 4. The absence of irritant or toxic properties. 5. The power of alleviating pain. 6. Its styptic action.

FOR SALE.—BACK NUMBERS AS FOLLOWS:

			PRICE.
The Archives of Comparative Medicine and Surgery [quar'ly].	Vol. I.,	1880,	out.
" " " " " "	Vol. II.,	1881,	$3.00
The Journal of Comparative Medicine and Surgery [quar'ly].	Vol. III.,	1882,	3.00
" " " " " "	Vol. IV.,	1883,	3.00
" " " " " "	Vol. V.,	1884,	3.00
" " " " " "	Vol. VI.,	1885,	5.00
" " " " " "	Vol. VII.,	1886,	3,00
" " " " " "	Vol. VIII.,	1887,	5.00
" " " " " "	Vol. IX.,	1888,	out.
" " " " " "	Vol. X.,	1889,	2.00
The Journal of Comparative Medicine and Veterinary Archives [monthly], Vol. XI., 1890,			2.00
The Journal of Comparative Medicine and Veterinary Archives [monthly]. Vol. XII., 1891,			3.00
The Journal of Comparative Medicine and Veterinary Archives [monthly]. Vol. XIII., 1892,			3.00
The Journal of Comparative Medicine and Veterinary Archives [6 numbers]. Vol. XIV., 1893,			1.50
The Journal of Comparative Medicine and Veterinary Archives [7 numbers]. Vol. XV., 1894,			1.75

Bound in cloth, each, $1.00 extra, post-free.

WANTED.—A FEW NUMBERS AS FOLLOWS:

Vol. I., 1880, July and October nnmbers, each	$1.00
Vol. VI., 1885, March, April and July numbers, each	0.50
Vol. VIII., 1887, July number	0.50
Vol. IX., 1888, January number	0.50

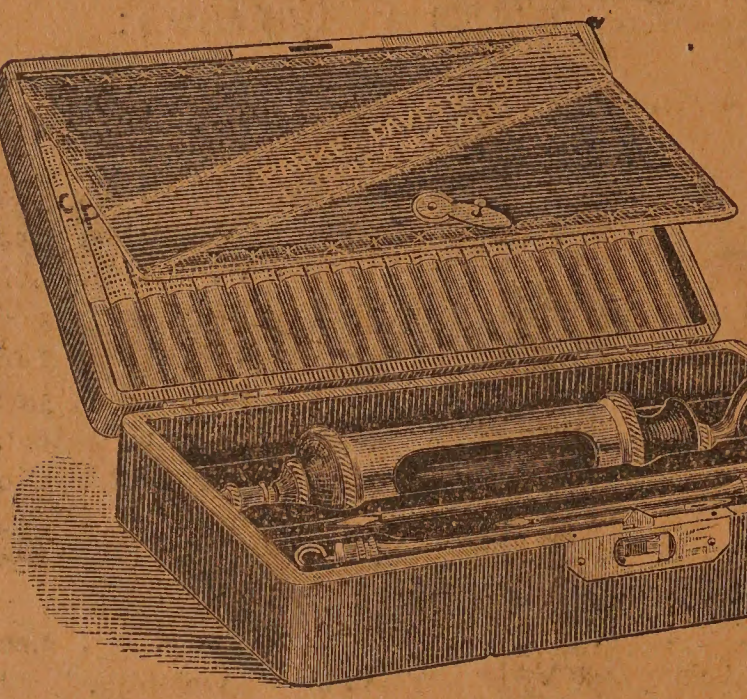
Convenient Preparations for Veterinary Practice.

HORSE BALLS, LOTIONS, LINIMENTS AND POWDERS.

We are prepared to manufacture coated or uncoated *Horse Balls* from private or special formulæ of every description. Many veterinary surgeons have favorite prescriptions which they administer largely in their practice, and the cost of putting up of which—in limited quantities and without facilities—is somewhat excessive. We are in a position to supply all such formulæ in quantities upon reasonable notice, and at very low rates: whether they are desired in the form of Horse Balls, Lotions, Liniments, Powders or otherwise. We use no inferior materials; our processes of manufacture are the best and latest improved

Private prescriptions entrusted to us for estimates or manufacture are held in strictest confidence; the formulæ, being regarded as the property of their owners, are never disclosed to any one.

IMPROVED VETERINARY HYPODERMIC CASE.



CONTENTS OF CASE.

1. A Graduated veterinary hypodermic syringe of improved construction.
2. A hypodermic needle.
3. A hypodermic trocar needle.
4. A hypodermic trocar.
5. A complete list of hypodermic tablets, put up in tubes of 12 tablets each.

ANTISEPTIC AND DISINFECTANT PREPARATIONS.

We have a full line of this class of preparations adapted for use in every condition in which antiseptics or disinfectants are indicated, and will be pleased to furnish complete descriptive circulars.

We may especially mention Antiseptic liquid, a combination of the chlorides of aluminium, sodium, magnesium, calcium and zinc, with oils of Eucalyptus globulus and Gaultheria procumbens. It is admirably adapted for use about stables, cellars, out-houses, etc.

WITCH HAZEL AND CHAULMOOGRA OIL.

The distilled extract of witch hazel has long been known to be a valuable remedy applied locally for relieving pain and subduing inflammation in wounds and contusions. Our product will be found of uniform strength and purity.

Chaulmoogra Oil is very largely used abroad for local application in stiffness, lameness and to prevent the development of these conditions after severe muscular exertion, as in hunting or racing.

Complete descriptive circulars and any desired information regarding our products promptly furnished on application.

PARKE DAVIS & CO., Manufacturing Chemists, DETROIT, MICH.